

Part III
Appendix B
RHA 3.53 Annual Limits on Intake (ALIs) and Derived Air
Concentrations (DACs) of Radionuclides for Occupational Exposure;
Effluent Concentrations; Concentrations for Release to Sewerage

Atomic Radionuclide No.	Class	Table 1 Occupational Values			Table 2 Effluent Concentrations		Table 3 Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2	Col. 3	Col. 1	Col. 2	Monthly
		ALI (uCi)	ALI (uCi)	DAC (uCi/ml)	Air (uCi/ml)	Water (uCi/ml)	Conc. (uCi/ml)
1 Hydrogen-3	Water, DAC includes skin absorption	8E+4	8E+4	2E-5	1E-7	1E-3	1E-2
	Gas (HT or T ₂)Submersion ¹ : Use above values as HT and T ₂ oxidize in air and in the body to HTO.						
4 Beryllium-7	W, all compounds 6E-3	4E+4	2E+4	9E-6	3E-8	6E-4	
	except those given for Y						
	Y, oxides, halides, and nitrates -	-	2E+4	8E-6	3E-8	-	-
4 Beryllium-10	W, see ⁷ Be	1E+3 LLI wall (1E+3)	2E+2	6E-8	2E-10	-	-
	Y, see ⁷ Be	-	1E+1	6E-9	2E-11	-	-
6 Carbon-11 ²	Monoxide Dioxide Compounds	- - 4E+5	1E+6 6E+5 4E+5	5E-4 3E-4 2E-4	2E-6 9E-7 6E-7	- - 6E-3	- - 6E-2
6 Carbon-14	Monoxide Dioxide Compounds	- - 2E+3	2E+6 2E+5 2E+3	7E-4 9E-5 1E-6	2E-6 3E-7 3E-9	- - 3E-5	- - 3E-4
7 Nitrogen-13 ²	Submersion ¹			4E-6	2E-8		
8 Oxygen-15 ²	Submersion ¹			4E-6	2E-8		
9 Fluorine-18 ²	D, fluorides of H, Li, Na, K, Rb, Cs, and Fr	5E+4 St. wall	7E+4	3E-5	1E-7	-	-

	(5E+4)	-	-	-	7E-4	7E-3	
	W, fluorides of Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, As, Sb, Bi, Fe, Ru, Os, Co, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, V, Nb, Ta, Mn, Tc, and Re	-	9E+4	4E-5	1E-7	-	-
	Y, lanthanum fluoride	-	8E+4	3E-5	1E-7	-	-
11 Sodium-22	D, all compounds 6E-5	4E+2	6E+2	3E-7	9E-10	6E-6	
11 Sodium-24	D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
12 Magnesium-28	D, all compounds except those given for W	7E+2	2E+3	7E-7	2E-9	9E-6	9E-5
	W, oxides, hydroxides, carbides, halides, & nitrates	-	1E+3	5E-7	2E-9	-	-
13 Aluminum-26	D, all compounds except those given for W	4E+2	6E+1	3E-8	9E-11	6E-6	6E-5
	W, oxides, hydroxides, carbides, halides, & nitrates	-	9E+1	4E-8	1E-10	-	-
14 Silicon-31	D, all compounds except those given for W and Y	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
	W, oxides, hydroxides, carbides, & nitrates	-	3E+4	1E-5	5E-8	-	-
	Y, aluminosilicate glass	-	3E+4	1E-5	4E-8	-	-
14 Silicon-32	D, see ³¹ Si LLI wall (3E+3)	2E+3	2E+2	1E-7	3E-10	-	-
	W, see ³¹ Si	-	1E+2	5E-8	2E-10	-	-

	Y, see ^{31}Si	-	5E+0	2E-9	7E-12	-	-
15 Phosphorus-32	D, all compounds except phosphates given for W	6E+2	9E+2	4E-7	1E-9	9E-6	9E-5
	W, phosphates of Zn^{2+} , S^{3+} , Mg^{2+} , Fe^{3+} , Bi^{3+} , and lanthanides	-	4E+2	2E-7	5E-10	-	-
15 Phosphorus-33	D, see ^{32}P W, see ^{32}P	6E+3 - 1E+4 LLI wall (8E+3)	8E+3 3E+3 2E+4 -	4E-6 1E-6 7E-6 -	1E-8 4E-9 2E-8 -	8E-5 - - 1E-4	8E-4 - - 1E-3
16 Sulfur-35	Vapor D, sulfides and sulfates except those given for W	- 1E+4 LLI wall (8E+3)	1E+4 2E+4 -	6E-6 7E-6 -	2E-8 2E-8 -	- - 1E-4	- - 1E-3
	W, elemental sulfur, sulfides of Sr, Ba, Ge, Sn, Pb, As, Sb, Bi, Cu, Ag, Au, Zn, Cd, Hg, W, and Mo. Sulfates of Ca, Sr, Ba, Ra, As, Sb, and Bi	-	6E+3	2E+3	9E-7	3E-9	-
17 Chlorine-36	D, chlorides of H, Li, Na, K, Rb, Cs, and Fr	2E+3	2E+3	1E-6	3E-9	2E-5	2E-4
	W, chlorides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, and Re	-	2E+2	1E-7	3E-10	-	-
17 Chlorine-38 ²	D, see ^{36}Cl	2E+4 St. wall (3E+4)	4E+4 -	2E-5 -	6E-8 -	-	-
					3E-4		3E-3

	W, see ^{36}Cl	-	5E+4	2E-5	6E-8	-	-
17 Chlorine-39 ²	D, see ^{36}Cl	2E+4 St. wall (4E+4)	5E+4	2E-5	7E-8	-	-
	W, see ^{36}Cl	-	6E+4	2E-5	8E-8	-	-
18 Argon-37	Submersion ¹	-	-	1E+0	6E-3	-	-
18 Argon-39	Submersion ¹	-	-	2E-4	8E-7	-	-
18 Argon-41	Submersion ¹	-	-	3E-6	1E-8	-	-
19 Potassium-40	D, all compounds	3E+2	4E+2	2E-7	6E-10	4E-6	4E-5
19 Potassium-42	D, all compounds	5E+3	5E+3	2E-6	7E-9	6E-5	6E-4
19 Potassium-43	D, all compounds	6E+3	9E+3	4E-6	1E-8	9E-5	9E-4
19 Potassium-44 ²	D, all compounds	2E+4 St. wall (4E+4)	7E+4	3E-5	9E-8	-	-
		-	-	-	5E-4	5E-3	
19 Potassium-45 ²	D, all compounds	3E+4 St. wall (5E+4)	1E+5	5E-5	2E-7	-	-
		-	-	-	7E-4	7E-3	
20 Calcium-41	W, all compounds	3E+3 Bone surf (4E+3)	4E+3 Bone surf (4E+3)	2E-6	-	-	-
		-	5E-9	6E-5			
20 Calcium-45	W, all compounds	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
20 Calcium-47	W, all compounds	8E+2	9E+2	4E-7	1E-9	1E-5	1E-4
21 Scandium-43	Y, all compounds	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
21 Scandium-44m	Y, all compounds	5E+2	7E+2	3E-7	1E-9	7E-6	7E-5
21 Scandium-44	Y, all compounds	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
21 Scandium-46	Y, all compounds	9E+2	2E+2	1E-7	3E-10	1E-5	1E-4
21 Scandium-47	Y, all compounds	2E+3 LLI wall (3E+3)	3E+3	1E-6	4E-9	-	-
		-	-	-	4E-5	4E-4	

21 Scandium-48	Y, all compounds	8E+2	1E+3	6E-7	2E-9	1E-5	1E-4
21 Scandium-49 ²	Y, all compounds	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
22 Titanium-44	D, all compounds except those given for W and Y	3E+2	1E+1	5E-9	2E-11	4E-6	4E-5
	W, oxides, hydroxides, carbides, halides, & nitrates	-	3E+1	1E-8	4E-11	-	-
	Y, SrTiO ₃	-	6E+0	2E-9	8E-12	-	-
22 Titanium-45	D, see ⁴⁴ Ti	9E+3	3E+4	1E-5	3E-8	1E-4	1E-3
	W, see ⁴⁴ Ti	-	4E+4	1E-5	5E-8	-	-
	Y, see ⁴⁴ Ti	-	3E+4	1E-5	4E-8	-	-
23 Vanadium-47 ²	D, all compounds except those given for W	3E+4 St. wall (3E+4)	8E+4	3E-5	1E-7	-	-
	W, oxides, hydroxides, carbides, and halides	-	1E+5	4E-5	1E-7	-	-
23 Vanadium-48	D, see ⁴⁷ V	6E+2	1E+3	5E-7	2E-9	9E-6	9E-5
	W, see ⁴⁷ V	-	6E+2	3E-7	9E-10	-	-
23 Vanadium-49	D, see ⁴⁷ V	7E+4 LLI wall (9E+4)	3E+4 Bone surf (3E+4)	1E-5	-	-	-
	W, see ⁴⁷ V	-	2E+4	8E-6	2E-8	-	-
24 Chromium-48	D, all compounds except those given for W and Y	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
	W, halides and nitrates	-	7E+3	3E-6	1E-8	-	-
	Y, oxides and hydroxides	-	7E+3	3E-6	1E-8	-	-
24 Chromium-49 ²	D, see ⁴⁸ Cr	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
	W, see ⁴⁸ Cr	-	1E+5	4E-5	1E-7	-	-

	Y, see ^{48}Cr	-	9E+4	4E-5	1E-7	-	-
24 Chromium-51	D, see ^{48}Cr	4E+4	5E+4	2E-5	6E-8	5E-4	5E-3
	W, see ^{48}Cr	-	2E+4	1E-5	3E-8	-	-
	Y, see ^{48}Cr	-	2E+4	8E-6	3E-8	-	-
25 Manganese-51 ²	D, all compounds except those given for W,	2E+4	5E+4	2E-5	7E-8	3E-4	3E-3
	W, oxides, hydroxides, halides, & nitrates	-	6E+4	3E-5	8E-8	-	-
25 Manganese-52m ²	D, see ^{51}Mn	3E+4	9E+4	4E-5	1E-7	-	-
	St. wall (4E+4)	-	-	-	-	5E-4	5E-3
	W, see ^{51}Mn	-	1E+5	4E-5	1E-7	-	-
25 Manganese-52	D, see ^{51}Mn	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
	W, see ^{51}Mn	-	9E+2	4E-7	1E-9	-	-
25 Manganese-53	D, see ^{51}Mn	5E+4	1E+4	5E-6	-	7E-4	7E-3
	Bone surf (2E+4)	-	-	3E-8	-	-	-
	W, see ^{51}Mn	-	1E+4	5E-6	2E-8	-	-
25 Manganese-54	D, see ^{51}Mn	2E+3	9E+2	4E-7	1E-9	3E-5	3E-4
	W, see ^{51}Mn	-	8E+2	3E-7	1E-9	-	-
25 Manganese-56	D, see ^{51}Mn	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
	W, see ^{51}Mn	-	2E+4	9E-6	3E-8	-	-
26 Iron-52	D, all compounds except those given for W	9E+2	3E+3	1E-6	4E-9	1E-5	1E-4
	W, oxides, hydroxides, and halides	-	2E+3	1E-6	3E-9	-	-
26 Iron-55	D, see ^{52}Fe	9E+3	2E+3	8E-7	3E-9	1E-4	1E-3
	W, see ^{52}Fe	-	4E+3	2E-6	6E-9	-	-
26 Iron-59	D, see ^{52}Fe	8E+2	3E+2	1E-7	5E-10	1E-5	1E-4
	W, see ^{52}Fe	-	5E+2	2E-7	7E-10	-	-
26 Iron-60	D, see ^{52}Fe	3E+1	6E+0	3E-9	9E-12	4E-7	4E-6
	W, see ^{52}Fe	-	2E+1	8E-9	3E-11	-	-

27 Cobalt-55	W, all compounds except those given for Y	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
	Y, oxides, hydroxides, halides, and nitrates	-	3E+3	1E-6	4E-9	-	-
27 Cobalt-56	W, see ^{55}Co Y, see ^{55}Co	5E+2 4E+2	3E+2 2E+2	1E-7 8E-8	4E-10 3E-10	6E-6 -	6E-5 -
27 Cobalt-57	W, see ^{55}Co Y, see ^{55}Co	8E+3 4E+3	3E+3 7E+2	1E-6 3E-7	4E-9 9E-10	6E-5 -	6E-4 -
27 Cobalt-58m	W, see ^{55}Co Y, see ^{55}Co	6E+4 -	9E+4 6E+4	4E-5 3E-5	1E-7 9E-8	8E-4 -	8E-3 -
27 Cobalt-58	W, see ^{55}Co Y, see ^{55}Co	2E+3 1E+3	1E+3 7E+2	5E-7 3E-7	2E-9 1E-9	2E-5 -	2E-4 -
27 Cobalt-60m ²	W, see ^{55}Co	1E+6 St. wall (1E+6)	4E+6 -	2E-3 -	6E-6 -	-	-
	Y, see ^{55}Co	-	3E+6	1E-3	4E-6	-	-
27 Cobalt-60	W, see ^{55}Co Y, see ^{55}Co	5E+2 2E+2	2E+2 3E+1	7E-8 1E-8	2E-10 5E-11	3E-6 -	3E-5 -
27 Cobalt-61 ²	W, see ^{55}Co Y, see ^{55}Co	2E+4 2E+4	6E+4 6E+4	3E-5 2E-5	9E-8 8E-8	3E-4 -	3E-3 -
27 Cobalt-62m ²	W, see ^{55}Co	4E+4 St. wall (5E+4)	2E+5 -	7E-5 -	2E-7 -	-	-
	Y, see ^{55}Co	-	2E+5	6E-5	2E-7	-	-
28 Nickel-56	D, all compounds except those given for W	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
	W, oxides, hydroxides and carbides	-	1E+3	5E-7	2E-9	-	-
	Vapor	-	1E+3	5E-7	2E-9	-	-
28 Nickel-57	D, see ^{56}Ni W, see ^{56}Ni Vapor	2E+3 - -	5E+3 3E+3 6E+3	2E-6 1E-6 3E-6	7E-9 4E-9 9E-9	2E-5 - -	2E-4 - -

28 Nickel-59	D, see ^{56}Ni W, see ^{56}Ni Vapor	2E+4 - -	4E+3 7E+3 2E+3	2E-6 3E-6 8E-7	5E-9 1E-8 3E-9	3E-4 - -	3E-3 - -
28 Nickel-63	D, see ^{56}Ni W, see ^{56}Ni Vapor	9E+3 - -	2E+3 3E+3 8E+2	7E-7 1E-6 3E-7	2E-9 4E-9 1E-9	1E-4 - -	1E-3 - -
28 Nickel-65	D, see ^{56}Ni W, see ^{56}Ni Vapor	8E+3 - -	2E+4 3E+4 2E+4	1E-5 1E-5 7E-6	3E-8 4E-8 2E-8	1E-4 - -	1E-3 - -
28 Nickel-66	D, see ^{56}Ni LLI wall (5E+2)	4E+2 - -	2E+3 - -	7E-7 - -	2E-9 - -	- 6E-6 -	- 6E-5 -
	W, see ^{56}Ni Vapor	- -	6E+2 3E+3	3E-7 1E-6	9E-10 4E-9	- -	- -
29 Copper-60 ²	D, all compounds except those given for W and Y	3E+4 St. wall (3E+4)	9E+4 - -	4E-5 - -	1E-7 - -	- 4E-4 -	- 4E-3 -
	W, sulfides, halides and nitrates	-	1E+5	5E-5	2E-7	-	-
	Y, oxides and hydroxides	-	1E+5	4E-5	1E-7	-	-
29 Copper-61	D, see ^{60}Cu W, see ^{60}Cu Y, see ^{60}Cu	1E+4 - -	3E+4 4E+4 4E+4	1E-5 2E-5 1E-5	4E-8 6E-8 5E-8	2E-4 - -	2E-3 - -
29 Copper-64	D, see ^{60}Cu W, see ^{60}Cu Y, see ^{60}Cu	1E+4 - -	3E+4 2E+4 2E+4	1E-5 1E-5 9E-6	4E-8 3E-8 3E-8	2E-4 - -	2E-3 - -
29 Copper-67	D, see ^{60}Cu W, see ^{60}Cu Y, see ^{60}Cu	5E+3 - -	8E+3 5E+3 5E+3	3E-6 2E-6 2E-6	1E-8 7E-9 6E-9	6E-5 - -	6E-4 - -
30 Zinc-62	Y, all compounds	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
30 Zinc-63 ²	Y, all compounds	2E+4 St. wall (3E+4)	7E+4 - -	3E-5 - -	9E-8 - -	- 3E-4 -	- 3E-3 -

30 Zinc-65	Y, all compounds	4E+2	3E+2	1E-7	4E-10	5E-6	5E-5
30 Zinc-69m	Y, all compounds	4E+3	7E+3	3E-6	1E-8	6E-5	6E-4
30 Zinc-69 ²	Y, all compounds	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
30 Zinc-71m	Y, all compounds	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
30 Zinc-72	Y, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
31 Gallium-65 ²	D, all compounds except those given for W	5E+4 St. wall (6E+4)	2E+5 -	7E-5 -	2E-7 -	-	-
	W, oxides, hydroxides, carbides, halides, and nitrates	-	2E+5	8E-5	3E-7	-	-
31 Gallium-66	D, see ⁶⁵ Ga W, see ⁶⁵ Ga	1E+3 -	4E+3 3E+3	1E-6 1E-6	5E-9 4E-9	1E-5 -	1E-4 -
31 Gallium-67	D, see ⁶⁵ Ga W, see ⁶⁵ Ga	7E+3 -	1E+4 1E+4	6E-6 4E-6	2E-8 1E-8	1E-4 -	1E-3 -
31 Gallium-68 ²	D, see ⁶⁵ Ga W, see ⁶⁵ Ga	2E+4 -	4E+4 5E+4	2E-5 2E-5	6E-8 7E-8	2E-4 -	2E-3 -
31 Gallium-70 ²	D, see ⁶⁵ Ga	5E+4 St. wall (7E+4)	2E+5 -	7E-5 -	2E-7 -	-	-
	W, see ⁶⁵ Ga	-	2E+5	8E-5	3E-7	-	-
31 Gallium-72	D, see ⁶⁵ Ga W, see ⁶⁵ Ga	1E+3 -	4E+3 3E+3	1E-6 1E-6	5E-9 4E-9	2E-5 -	2E-4 -
31 Gallium-73	D, see ⁶⁵ Ga W, see ⁶⁵ Ga	5E+3 -	2E+4 2E+4	6E-6 6E-6	2E-8 2E-8	7E-5 -	7E-4 -
32 Germanium-66	D, all compounds except those given for W	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
	W, oxides, sulfides, and halides	-	2E+4	8E-6	3E-8	-	-

32 Germanium-67 ²	D, see ⁶⁶ Ge	3E+4 St. wall (4E+4)	9E+4 -	4E-5 -	1E-7 -	-
	W, see ⁶⁶ Ge	-	1E+5	4E-5	1E-7	-
32 Germanium-68	D, see ⁶⁶ Ge	5E+3	4E+3	2E-6	5E-9	6E-5
	W, see ⁶⁶ Ge	-	1E+2	4E-8	1E-10	-
32 Germanium-69	D, see ⁶⁶ Ge	1E+4	2E+4	6E-6	2E-8	2E-4
	W, see ⁶⁶ Ge	-	8E+3	3E-6	1E-8	-
32 Germanium-71	D, see ⁶⁶ Ge	5E+5	4E+5	2E-4	6E-7	7E-3
	W, see ⁶⁶ Ge	-	4E+4	2E-5	6E-8	-
32 Germanium-75 ²	D, see ⁶⁶ Ge	4E+4 St. wall (7E+4)	8E+4 -	3E-5 -	1E-7 -	-
	W, see ⁶⁶ Ge	-	8E+4	4E-5	1E-7	-
32 Germanium-77	D, see ⁶⁶ Ge	9E+3	1E+4	4E-6	1E-8	1E-4
	W, see ⁶⁶ Ge	-	6E+3	2E-6	8E-9	-
32 Germanium-78 ²	D, see ⁶⁶ Ge	2E+4 St. wall (2E+4)	2E+4	9E-6	3E-8	-
	W, see ⁶⁶ Ge	-	2E+4	9E-6	3E-8	-
33 Arsenic-69 ²	W, all compounds	3E+4 St. wall (4E+4)	1E+5 -	5E-5 -	2E-7 -	-
33 Arsenic-70 ²	W, all compounds	1E+4	5E+4	2E-5	7E-8	2E-4
33 Arsenic-71	W, all compounds	4E+3	5E+3	2E-6	6E-9	5E-5
33 Arsenic-72	W, all compounds	9E+2	1E+3	6E-7	2E-9	1E-5
33 Arsenic-73	W, all compounds	8E+3	2E+3	7E-7	2E-9	1E-4
33 Arsenic-74	W, all compounds	1E+3	8E+2	3E-7	1E-9	2E-5
33 Arsenic-76	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5
33 Arsenic-77	W, all compounds	4E+3 LLI wall (5E+3)	5E+3 -	2E-6 -	7E-9 -	-
					6E-5	6E-4

33 Arsenic-78 ²	W, all compounds	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
34 Selenium-70 ²	D, all compounds except those given for W	2E+4	4E+4	2E-5	5E-8	1E-4	1E-3
	W, oxides, hydroxides, carbides, and elemental Se	1E+4	4E+4	2E-5	6E-8	-	-
34 Selenium-73m ²	D, see ⁷⁰ Se W, see ⁷⁰ Se	6E+4 3E+4	2E+5 1E+5	6E-5 6E-5	2E-7 2E-7	4E-4 -	4E-3 -
34 Selenium-73	D, see ⁷⁰ Se W, see ⁷⁰ Se	3E+3 -	1E+4 2E+4	5E-6 7E-6	2E-8 2E-8	4E-5 -	4E-4 -
34 Selenium-75	D, see ⁷⁰ Se W, see ⁷⁰ Se	5E+2 -	7E+2 6E+2	3E-7 3E-7	1E-9 8E-10	7E-6 -	7E-5 -
34 Selenium-79	D, see ⁷⁰ Se W, see ⁷⁰ Se	6E+2 -	8E+2 6E+2	3E-7 2E-7	1E-9 8E-10	8E-6 -	8E-5 -
34 Selenium-81m ²	D, see ⁷⁰ Se W, see ⁷⁰ Se	4E+4 2E+4	7E+4 7E+4	3E-5 3E-5	9E-8 1E-7	3E-4 -	3E-3 -
34 Selenium-81 ²	D, see ⁷⁰ Se	6E+4	2E+5	9E-5	3E-7	-	-
	St. wall (8E+4)	-	-	-	-	1E-3	1E-2
	W, see ⁷⁰ Se	-	2E+5	1E-4	3E-7	-	-
34 Selenium-83 ²	D, see ⁷⁰ Se W, see ⁷⁰ Se	4E+4 3E+4	1E+5 1E+5	5E-5 5E-5	2E-7 2E-7	4E-4 -	4E-3 -
35 Bromine-74m ²	D, bromides of H, Li, Na, K, Rb, Cs, and Fr	1E+4	4E+4	2E-5	5E-8	-	-
	St. wall (2E+4)	-	-	-	-	3E-4	3E-3
	W, bromides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb,						

	Ta, Mn, Tc, and Re	-	4E+4	2E-5	6E-8	-	-
35 Bromine-74 ²	D, see ⁷⁴ mBr	2E+4 St. wall (4E+4)	7E+4 -	3E-5 -	1E-7 -	-	-
	W, see ⁷⁴ mBr	-	8E+4	4E-5	1E-7	-	-
35 Bromine-75 ²	D, see ⁷⁴ mBr	3E+4 St. wall (4E+4)	5E+4 -	2E-5 -	7E-8 -	-	-
	W, see ⁷⁴ mBr	-	5E+4	2E-5	7E-8	-	-
35 Bromine-76	D, see ⁷⁴ mBr	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
	W, see ⁷⁴ mBr	-	4E+3	2E-6	6E-9	-	-
35 Bromine-77	D, see ⁷⁴ mBr	2E+4	2E+4	1E-5	3E-8	2E-4	2E-3
	W, see ⁷⁴ mBr	-	2E+4	8E-6	3E-8	-	-
35 Bromine-80m	D, see ⁷⁴ mBr	2E+4	2E+4	7E-6	2E-8	3E-4	3E-3
	W, see ⁷⁴ mBr	-	1E+4	6E-6	2E-8	-	-
35 Bromine-80 ²	D, see ⁷⁴ mBr	5E+4 St. wall (9E+4)	2E+5 -	8E-5 -	3E-7 -	-	-
	W, see ⁷⁴ mBr	-	2E+5	9E-5	3E-7	-	-
35 Bromine-82	D, see ⁷⁴ mBr	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
	W, see ⁷⁴ mBr	-	4E+3	2E-6	5E-9	-	-
35 Bromine-83	D, see ⁷⁴ mBr	5E+4 St. wall (7E+4)	6E+4 -	3E-5 -	9E-8 -	-	-
	W, see ⁷⁴ mBr	-	6E+4	3E-5	9E-8	-	-
35 Bromine-84 ²	D, see ⁷⁴ mBr	2E+4 St. wall (3E+4)	6E+4 -	2E-5 -	8E-8 -	-	-
	W, see ⁷⁴ mBr	-	6E+4	3E-5	9E-8	-	-
36 Krypton-74 ²	Submersion ¹	-	-	3E-6	1E-8	-	-
36 Krypton-76	Submersion ¹	-	-	9E-6	4E-8	-	-
36 Krypton-77 ²	Submersion ¹	-	-	4E-6	2E-8	-	-

36 Krypton-79	Submersion ¹	-	-	2E-5	7E-8	-	-
36 Krypton-81	Submersion ¹	-	-	7E-4	3E-6	-	-
36 Krypton-83m ²	Submersion ¹	-	-	1E-2	5E-5	-	-
36 Krypton-85m	Submersion ¹	-	-	2E-5	1E-7	-	-
36 Krypton-85	Submersion ¹	-	-	1E-4	7E-7	-	-
36 Krypton-87 ²	Submersion ¹	-	-	5E-6	2E-8	-	-
36 Krypton-88	Submersion ¹	-	-	2E-6	9E-9	-	-
37 Rubidium-79 ²	D, all compounds	4E+4 St. wall (6E+4)	1E+5	5E-5	2E-7	-	-
		-	-	-	8E-4	8E-3	
37 Rubidium-81m ²	D, all compounds	2E+5 St. wall (3E+5)	3E+5	1E-4	5E-7	-	-
		-	-	-	4E-3	4E-2	
37 Rubidium-81	D, all compounds	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
37 Rubidium-82m	D, all compounds	1E+4	2E+4	7E-6	2E-8	2E-4	2E-3
37 Rubidium-83	D, all compounds	6E+2	1E+3	4E-7	1E-9	9E-6	9E-5
37 Rubidium-84	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37 Rubidium-86	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37 Rubidium-87	D, all compounds	1E+3	2E+3	6E-7	2E-9	1E-5	1E-4
37 Rubidium-88 ²	D, all compounds	2E+4 St. wall (3E+4)	6E+4	3E-5	9E-8	-	-
		-	-	-	4E-4	4E-3	
37 Rubidium-89 ²	D, all compounds	4E+4 St. wall (6E+4)	1E+5	6E-5	2E-7	-	-
		-	-	-	9E-4	9E-3	
38 Strontium-80 ²	D, all soluble compounds except SrTiO ₃	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
	Y, all insoluble compounds and SrTiO ₃	-	1E+4	5E-6	2E-8	-	-

38	Strontium-81 ²	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	3E+4 2E+4	8E+4 8E+4	3E-5 3E-5	1E-7 1E-7	3E-4 -	3E-3 -
38	Strontium-82	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	3E+2 LLI wall (2E+2)	4E+2 -	2E-7 -	6E-10 -	-	-
38	Strontium-83	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	3E+3 2E+3	7E+3 4E+3	3E-6 1E-6	1E-8 5E-9	3E-5 -	3E-4 -
38	Strontium-85m ²	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	2E+5 -	6E+5 8E+5	3E-4 4E-4	9E-7 1E-6	3E-3 -	3E-2 -
38	Strontium-85	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	3E+3 -	3E+3 2E+3	1E-6 6E-7	4E-9 2E-9	4E-5 -	4E-4 -
38	Strontium-87m	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	5E+4 4E+4	1E+5 2E+5	5E-5 6E-5	2E-7 2E-7	6E-4 -	6E-3 -
38	Strontium-89	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	6E+2 LLI wall (6E+2)	8E+2 -	4E-7 -	1E-9 -	-	-
38	Strontium-90	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	3E+1 Bone surf (4E+1)	2E+1 Bone surf (2E+1)	8E-9 -	-	-	-
38	Strontium-91	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	2E+3 -	6E+3 4E+3	2E-6 1E-6	8E-9 5E-9	2E-5 -	2E-4 -
38	Strontium-92	D, see ⁸⁰ Sr Y, see ⁸⁰ Sr	3E+3 -	9E+3 7E+3	4E-6 3E-6	1E-8 9E-9	4E-5 -	4E-4 -
39	Yttrium-86m ²	W, all compounds except those given for Y Y, oxides and hydroxides	2E+4 -	6E+4 5E+4	2E-5 2E-5	8E-8 8E-8	3E-4 -	3E-3 -
39	Yttrium-86	W, see ^{86m} Y	1E+3	3E+3	1E-6	5E-9	2E-5	2E-4

	Y, see ^{86m}Y	-	3E+3	1E-6	5E-9	-	-
39 Yttrium-87	W, see ^{86m}Y	2E+3	3E+3	1E-6	5E-9	3E-5	3E-4
	Y, see ^{86m}Y	-	3E+3	1E-6	5E-9	-	-
39 Yttrium-88	W, see ^{86m}Y	1E+3	3E+2	1E-7	3E-10	1E-5	1E-4
	Y, see ^{86m}Y	-	2E+2	1E-7	3E-10	-	-
39 Yttrium-90m	W, see ^{86m}Y	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
	Y, see ^{86m}Y	-	1E+4	5E-6	2E-8	-	-
39 Yttrium-90	W, see ^{86m}Y	4E+2	7E+2	3E-7	9E-10	-	-
	LLI wall (5E+2)	-	-	-	-	7E-6	7E-5
	Y, see ^{86m}Y	-	6E+2	3E-7	9E-10	-	-
39 Yttrium-91m ²	W, see ^{86m}Y	1E+5	2E+5	1E-4	3E-7	2E-3	2E-2
	Y, see ^{86m}Y	-	2E+5	7E-5	2E-7	-	-
39 Yttrium-91	W, see ^{86m}Y	5E+2	2E+2	7E-8	2E-10	-	-
	LLI wall (6E+2)	-	-	-	-	8E-6	8E-5
	Y, see ^{86m}Y	-	1E+2	5E-8	2E-10	-	-
39 Yttrium-92	W, see ^{86m}Y	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
	Y, see ^{86m}Y	-	8E+3	3E-6	1E-8	-	-
39 Yttrium-93	W, see ^{86m}Y	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
	Y, see ^{86m}Y	-	2E+3	1E-6	3E-9	-	-
39 Yttrium-94 ²	W, see ^{86m}Y	2E+4	8E+4	3E-5	1E-7	-	-
	St. wall (3E+4)	-	-	-	-	4E-4	4E-3
	Y, see ^{86m}Y	-	8E+4	3E-5	1E-7	-	-
39 Yttrium-95 ²	W, see ^{86m}Y	4E+4	2E+5	6E-5	2E-7	-	-
	St. wall (5E+4)	-	-	-	-	7E-4	7E-3
	Y, see ^{86m}Y	-	1E+5	6E-5	2E-7	-	-
40 Zirconium-86	D, all compounds except those given for W and Y	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4

		W, oxides, hydroxides, halides, and nitrates	-	3E+3	1E-6	4E-9	-	-
		Y, carbide	-	2E+3	1E-6	3E-9	-	-
40 Zirconium-88	D, see ^{86}Zr	4E+3	2E+2	9E-8	3E-10	5E-5	5E-4	
	W, see ^{86}Zr	-	5E+2	2E-7	7E-10	-	-	
	Y, see ^{86}Zr	-	3E+2	1E-7	4E-10	-	-	
40 Zirconium-89	D, see ^{86}Zr	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4	
	W, see ^{86}Zr	-	2E+3	1E-6	3E-9	-	-	
	Y, see ^{86}Zr	-	2E+3	1E-6	3E-9	-	-	
40 Zirconium-93	D, see ^{86}Zr	1E+3	6E+0	3E-9	-	-	-	
	Bone	Bone						
	surf	surf						
	(3E+3)	(2E+1)	-	2E-11	4E-5	4E-4		
	W, see ^{86}Zr	-	2E+1	1E-8	-	-	-	
		Bone						
		surf						
		(6E+1)	-	9E-11	-	-	-	
	Y, see ^{86}Zr	-	6E+1	2E-8	-	-	-	
		Bone						
		surf						
		(7E+1)	-	9E-11	-	-	-	
40 Zirconium-95	D, see ^{86}Zr	1E+3	1E+2	5E-8	-	2E-5	2E-4	
		Bone						
		surf						
		(3E+2)	-	4E-10	-	-	-	
	W, see ^{86}Zr	-	4E+2	2E-7	5E-10	-	-	
	Y, see ^{86}Zr	-	3E+2	1E-7	4E-10	-	-	
40 Zirconium-97	D, see ^{86}Zr	6E+2	2E+3	8E-7	3E-9	9E-6	9E-5	
	W, see ^{86}Zr	-	1E+3	6E-7	2E-9	-	-	
	Y, see ^{86}Zr	-	1E+3	5E-7	2E-9	-	-	
41 Niobium-88 ²	W, all compounds except those given for Y	5E+4	2E+5	9E-5	3E-7	-	-	
		St. wall						
		(7E+4)	-	-	-	1E-3	1E-2	
	Y, oxides and hydroxides	-	2E+5	9E-5	3E-7	-	-	

41 Niobium-89m ²	W, see ⁸⁸ Nb (66 min)	1E+4 -	4E+4 4E+4	2E-5 2E-5	6E-8 5E-8	1E-4 -	1E-3 -
41 Niobium-89	W, see ⁸⁸ Nb (122 min)	5E+3 -	2E+4 2E+4	8E-6 6E-6	3E-8 2E-8	7E-5 -	7E-4 -
41 Niobium-90	W, see ⁸⁸ Nb Y, see ⁸⁸ Nb	1E+3 -	3E+3 2E+3	1E-6 1E-6	4E-9 3E-9	1E-5 -	1E-4 -
41 Niobium-93m	W, see ⁸⁸ Nb	9E+3 (1E+4)	2E+3 LLI wall	8E-7 -	3E-9 -	- 2E-4	- 2E-3
	Y, see ⁸⁸ Nb	-	2E+2	7E-8	2E-10	-	-
41 Niobium-94	W, see ⁸⁸ Nb Y, see ⁸⁸ Nb	9E+2 -	2E+2 2E+1	8E-8 6E-9	3E-10 2E-11	1E-5 -	1E-4 -
41 Niobium-95m	W, see ⁸⁸ Nb	2E+3 (2E+3)	3E+3 LLI wall	1E-6 -	4E-9 -	- 3E-5	- 3E-4
	Y, see ⁸⁸ Nb	-	2E+3	9E-7	3E-9	-	-
41 Niobium-95	W, see ⁸⁸ Nb Y, see ⁸⁸ Nb	2E+3 -	1E+3 1E+3	5E-7 5E-7	2E-9 2E-9	3E-5 -	3E-4 -
41 Niobium-96	W, see ⁸⁸ Nb Y, see ⁸⁸ Nb	1E+3 -	3E+3 2E+3	1E-6 1E-6	4E-9 3E-9	2E-5 -	2E-4 -
41 Niobium-97 ²	W, see ⁸⁸ Nb Y, see ⁸⁸ Nb	2E+4 -	8E+4 7E+4	3E-5 3E-5	1E-7 1E-7	3E-4 -	3E-3 -
41 Niobium-98 ²	W, see ⁸⁸ Nb Y, see ⁸⁸ Nb	1E+4 -	5E+4 5E+4	2E-5 2E-5	8E-8 7E-8	2E-4 -	2E-3 -
42 Molybdenum-90D	all compounds except those given for Y	4E+3	7E+3	3E-6	1E-8	3E-5	3E-4
	Y, oxides, hydroxides, and MoS ₂	2E+3	5E+3	2E-6	6E-9	-	-
42 Molybdenum-93mD	see ⁹⁰ Mo Y, see ⁹⁰ Mo	9E+3 4E+3	2E+4 1E+4	7E-6 6E-6	2E-8 2E-8	6E-5 -	6E-4 -
42 Molybdenum-93D	see ⁹⁰ Mo	4E+3	5E+3	2E-6	8E-9	5E-5	5E-4

	Y, see ^{90}Mo	2E+4	2E+2	8E-8	2E-10	-	-
42	Molybdenum-99 D, see ^{90}Mo	2E+3 LLI wall (1E+3)	3E+3	1E-6	4E-9	-	-
	Y, see ^{90}Mo	1E+3	1E+3	6E-7	2E-9	-	-
42	Molybdenum-101 ^2D , see ^{90}Mo	4E+4 St. wall (5E+4)	1E+5	6E-5	2E-7	-	-
	Y, see ^{90}Mo	-	1E+5	6E-5	2E-7	-	-
43	Technetium-93m 2 D, all compounds except those given for W	7E+4	2E+5	6E-5	2E-7	1E-3	1E-2
	W, oxides, hydroxides, halides, and nitrates	-	3E+5	1E-4	4E-7	-	-
43	Technetium-93 D, see $^{93\text{m}}\text{Tc}$ W, see $^{93\text{m}}\text{Tc}$	3E+4 -	7E+4 1E+5	3E-5 4E-5	1E-7 1E-7	4E-4 -	4E-3 -
43	Technetium-94m 2 D, see $^{93\text{m}}\text{Tc}$ W, see $^{93\text{m}}\text{Tc}$	2E+4 -	4E+4 6E+4	2E-5 2E-5	6E-8 8E-8	3E-4 -	3E-3 -
43	Technetium-94 D, see $^{93\text{m}}\text{Tc}$ W, see $^{93\text{m}}\text{Tc}$	9E+3 -	2E+4 2E+4	8E-6 1E-5	3E-8 3E-8	1E-4 -	1E-3 -
43	Technetium-95m D, see $^{93\text{m}}\text{Tc}$ W, see $^{93\text{m}}\text{Tc}$	4E+3 -	5E+3 2E+3	2E-6 8E-7	8E-9 3E-9	5E-5 -	5E-4 -
43	Technetium-95 D, see $^{93\text{m}}\text{Tc}$ W, see $^{93\text{m}}\text{Tc}$	1E+4 -	2E+4 2E+4	9E-6 8E-6	3E-8 3E-8	1E-4 -	1E-3 -
43	Technetium-96m 2 D, see $^{93\text{m}}\text{Tc}$ W, see $^{93\text{m}}\text{Tc}$	2E+5 -	3E+5 2E+5	1E-4 1E-4	4E-7 3E-7	2E-3 -	2E-2 -
43	Technetium-96 D, see $^{93\text{m}}\text{Tc}$ W, see $^{93\text{m}}\text{Tc}$	2E+3 -	3E+3 2E+3	1E-6 9E-7	5E-9 3E-9	3E-5 -	3E-4 -
43	Technetium-97m D, see $^{93\text{m}}\text{Tc}$	5E+3 -	7E+3 St. wall (7E+3)	3E-6 -	-	6E-5	6E-4
	W, see $^{93\text{m}}\text{Tc}$	-	1E+3	5E-7	2E-9	-	-
43	Technetium-97 D, see $^{93\text{m}}\text{Tc}$	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3

		W, see ^{93m}Tc	-	6E+3	2E-6	8E-9	-	-
43 Technetium-98	D, see ^{93m}Tc		1E+3	2E+3	7E-7	2E-9	1E-5	1E-4
	W, see ^{93m}Tc		-	3E+2	1E-7	4E-10	-	-
43 Technetium-99m	D, see ^{93m}Tc		8E+4	2E+5	6E-5	2E-7	1E-3	1E-2
	W, see ^{93m}Tc		-	2E+5	1E-4	3E-7	-	-
43 Technetium-99	D, see ^{93m}Tc		4E+3	5E+3 St. wall (6E+3)	2E-6	-	6 E-5	6E-4
			-	-	8E-9	-	-	-
	W, see ^{93m}Tc		-	7E+2	3E-7	9E-10	-	-
43 Technetium-101 ²	D, see ^{93m}Tc		9E+4 St. wall (1E+5)	3E+5	1E-4	5E-7	-	-
			-	-	-	-	2E-3	2E-2
	W, see ^{93m}Tc		-	4E+5	2E-4	5E-7	-	-
43 Technetium-104 ²	D, see ^{93m}Tc		2E+4 St. wall (3E+4)	7E+4	3E-5	1E-7	-	-
			-	-	-	-	4E-4	4E-3
	W, see ^{93m}Tc		-	9E+4	4E-5	1E-7	-	-
44 Ruthenium-94 ²	D, all compounds except those given for W and Y		2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
	W, halides		-	6E+4	3E-5	9E-8	-	-
	Y, oxides and hydroxides		-	6E+4	2E-5	8E-8	-	-
44 Ruthenium-97	D, see ^{94}Ru		8E+3	2E+4	8E-6	3E-8	1E-4	1E-3
	W, see ^{94}Ru		-	1E+4	5E-6	2E-8	-	-
	Y, see ^{94}Ru		-	1E+4	5E-6	2E-8	-	-
44 Ruthenium-103	D, see ^{94}Ru		2E+3	2E+3	7E-7	2E-9	3E-5	3E-4
	W, see ^{94}Ru		-	1E+3	4E-7	1E-9	-	-
	Y, see ^{94}Ru		-	6E+2	3E-7	9E-10	-	-
44 Ruthenium-105	D, see ^{94}Ru		5E+3	1E+4	6E-6	2E-8	7E-5	7E-4
	W, see ^{94}Ru		-	1E+4	6E-6	2E-8	-	-
	Y, see ^{94}Ru		-	1E+4	5E-6	2E-8	-	-
44 Ruthenium-106	D, see ^{94}Ru		2E+2 LLI wall (2E+2)	9E+1	4E-8	1E-10	-	-
			-	-	-	-	3E-6	3E-5

		W, see ^{94}Ru	-	5E+1	2E-8	8E-11	-	-
		Y, see ^{94}Ru	-	1E+1	5E-9	2E-11	-	-
45 Rhodium-99m	D, all compounds except those given for W and Y		2E+4	6E+4	2E-5	8E-8	2E-4	2E-3
	W, halides		-	8E+4	3E-5	1E-7	-	-
	Y, oxides and hydroxides		-	7E+4	3E-5	9E-8	-	-
45 Rhodium-99	D, see $^{99\text{m}}\text{Rh}$	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4	
	W, see $^{99\text{m}}\text{Rh}$	-	2E+3	9E-7	3E-9	-	-	
	Y, see $^{99\text{m}}\text{Rh}$	-	2E+3	8E-7	3E-9	-	-	
45 Rhodium-100	D, see $^{99\text{m}}\text{Rh}$	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4	
	W, see $^{99\text{m}}\text{Rh}$	-	4E+3	2E-6	6E-9	-	-	
	Y, see $^{99\text{m}}\text{Rh}$	-	4E+3	2E-6	5E-9	-	-	
45 Rhodium-101m	D, see $^{99\text{m}}\text{Rh}$	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4	
	W, see $^{99\text{m}}\text{Rh}$	-	8E+3	4E-6	1E-8	-	-	
	Y, see $^{99\text{m}}\text{Rh}$	-	8E+3	3E-6	1E-8	-	-	
45 Rhodium-101	D, see $^{99\text{m}}\text{Rh}$	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4	
	W, see $^{99\text{m}}\text{Rh}$	-	8E+2	3E-7	1E-9	-	-	
	Y, see $^{99\text{m}}\text{Rh}$	-	2E+2	6E-8	2E-10	-	-	
45 Rhodium-102m	D, see $^{99\text{m}}\text{Rh}$	1E+3 LLI wall (1E+3)	5E+2	2E-7	7E-10	-	-	
	W, see $^{99\text{m}}\text{Rh}$	-	4E+2	2E-7	5E-10	-	-	
	Y, see $^{99\text{m}}\text{Rh}$	-	1E+2	5E-8	2E-10	-	-	
45 Rhodium-102	D, see $^{99\text{m}}\text{Rh}$	6E+2	9E+1	4E-8	1E-10	8E-6	8E-5	
	W, see $^{99\text{m}}\text{Rh}$	-	2E+2	7E-8	2E-10	-	-	
	Y, see $^{99\text{m}}\text{Rh}$	-	6E+1	2E-8	8E-11	-	-	
45 Rhodium-103m ²	D, see $^{99\text{m}}\text{Rh}$	4E+5	1E+6	5E-4	2E-6	6E-3	6E-2	
	W, see $^{99\text{m}}\text{Rh}$	-	1E+6	5E-4	2E-6	-	-	
	Y, see $^{99\text{m}}\text{Rh}$	-	1E+6	5E-4	2E-6	-	-	
45 Rhodium-105	D, see $^{99\text{m}}\text{Rh}$	4E+3 LLI wall (4E+3)	1E+4	5E-6	2E-8	-	-	
		-	-	-	-	5E-5	5E-4	

	W, see ^{99m} Rh	-	6E+3	3E-6	9E-9	-	-
	Y, see ^{99m} Rh	-	6E+3	2E-6	8E-9	-	-
45 Rhodium-106m	D, see ^{99m} Rh	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
	W, see ^{99m} Rh	-	4E+4	2E-5	5E-8	-	-
	Y, see ^{99m} Rh	-	4E+4	1E-5	5E-8	-	-
45 Rhodium-107 ²	D, see ^{99m} Rh	7E+4 St. wall (9E+4)	2E+5	1E-4	3E-7	-	-
	W, see ^{99m} Rh	-	3E+5	1E-4	4E-7	-	-
	Y, see ^{99m} Rh	-	3E+5	1E-4	3E-7	-	-
46 Palladium-100	D, all compounds except those given for W and Y	1E+3	1E+3	6E-7	2E-9	2E-5	2E-4
	W, nitrates	-	1E+3	5E-7	2E-9	-	-
	Y, oxides and hydroxides	-	1E+3	6E-7	2E-9	-	-
46 Palladium-101	D, see ¹⁰⁰ Pd	1E+4	3E+4	1E-5	5E-8	2E-4	2E-3
	W, see ¹⁰⁰ Pd	-	3E+4	1E-5	5E-8	-	-
	Y, see ¹⁰⁰ Pd	-	3E+4	1E-5	4E-8	-	-
46 Palladium-103	D, see ¹⁰⁰ Pd	6E+3 LLI wall (7E+3)	6E+3	3E-6	9E-9	-	-
	W, see ¹⁰⁰ Pd	-	4E+3	2E-6	6E-9	-	-
	Y, see ¹⁰⁰ Pd	-	4E+3	1E-6	5E-9	-	-
46 Palladium-107	D, see ¹⁰⁰ Pd	3E+4 LLI wall (4E+4)	2E+4 Kidneys (2E+4)	9E-6	-	-	-
	W, see ¹⁰⁰ Pd	-	7E+3	3E-6	1E-8	-	-
	Y, see ¹⁰⁰ Pd	-	4E+2	2E-7	6E-10	-	-
46 Palladium-109	D, see ¹⁰⁰ Pd	2E+3	6E+3	3E-6	9E-9	3E-5	3E-4
	W, see ¹⁰⁰ Pd	-	5E+3	2E-6	8E-9	-	-
	Y, see ¹⁰⁰ Pd	-	5E+3	2E-6	6E-9	-	-
47 Silver-102 ²	D, all compounds						

	except those given for W and Y	5E+4 St. wall (6E+4)	2E+5	8E-5	2E-7	-	-
	W, nitrates and sulfides	-	2E+5	9E-5	3E-7	-	-
	Y, oxides and hydroxides	-	2E+5	8E-5	3E-7	-	-
47 Silver-103 ²	D, see ¹⁰² Ag	4E+4	1E+5	4E-5	1E-7	5E-4	5E-3
	W, see ¹⁰² Ag	-	1E+5	5E-5	2E-7	-	-
	Y, see ¹⁰² Ag	-	1E+5	5E-5	2E-7	-	-
47 Silver-104m ²	D, see ¹⁰² Ag	3E+4	9E+4	4E-5	1E-7	4E-4	4E-3
	W, see ¹⁰² Ag	-	1E+5	5E-5	2E-7	-	-
	Y, see ¹⁰² Ag	-	1E+5	5E-5	2E-7	-	-
47 Silver-104 ²	D, see ¹⁰² Ag	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
	W, see ¹⁰² Ag	-	1E+5	6E-5	2E-7	-	-
	Y, see ¹⁰² Ag	-	1E+5	6E-5	2E-7	-	-
47 Silver-105	D, see ¹⁰² Ag	3E+3	1E+3	4E-7	1E-9	4E-5	4E-4
	W, see ¹⁰² Ag	-	2E+3	7E-7	2E-9	-	-
	Y, see ¹⁰² Ag	-	2E+3	7E-7	2E-9	-	-
47 Silver-106m	D, see ¹⁰² Ag	8E+2	7E+2	3E-7	1E-9	1E-5	1E-4
	W, see ¹⁰² Ag	-	9E+2	4E-7	1E-9	-	-
	Y, see ¹⁰² Ag	-	9E+2	4E-7	1E-9	-	-
47 Silver-106 ²	D, see ¹⁰² Ag	6E+4 St. wall (6E+4)	2E+5	8E-5	3E-7	-	-
	W, see ¹⁰² Ag	-	2E+5	9E-5	3E-7	-	-
	Y, see ¹⁰² Ag	-	2E+5	8E-5	3E-7	-	-
47 Silver-108m	D, see ¹⁰² Ag	6E+2	2E+2	8E-8	3E-10	9E-6	9E-5
	W, see ¹⁰² Ag	-	3E+2	1E-7	4E-10	-	-
	Y, see ¹⁰² Ag	-	2E+1	1E-8	3E-11	-	-
47 Silver-110m	D, see ¹⁰² Ag	5E+2	1E+2	5E-8	2E-10	6E-6	6E-5
	W, see ¹⁰² Ag	-	2E+2	8E-8	3E-10	-	-
	Y, see ¹⁰² Ag	-	9E+1	4E-8	1E-10	-	-
47 Silver-111	D, see ¹⁰² Ag	9E+2 LLI wall (1E+3)	2E+3 Liver (2E+3)	6E-7	-	-	-
					2E-9	2E-5	2E-4

	W, see ^{102}Ag	-	9E+2	4E-7	1E-9	-	-
	Y, see ^{102}Ag	-	9E+2	4E-7	1E-9	-	-
47 Silver-112	D, see ^{102}Ag	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
	W, see ^{102}Ag	-	1E+4	4E-6	1E-8	-	-
	Y, see ^{102}Ag	-	9E+3	4E-6	1E-8	-	-
47 Silver-115 ²	D, see ^{102}Ag	3E+4	9E+4	4E-5	1E-7	-	-
		St. wall (3E+4)	-	-	-	4E-4	4E-3
	W, see ^{102}Ag	-	9E+4	4E-5	1E-7	-	-
	Y, see ^{102}Ag	-	8E+4	3E-5	1E-7	-	-
48 Cadmium-104 ²	D, all compounds except those given for W and Y	2E+4	7E+4	3E-5	9E-8	3E-4	3E-3
	W, sulfides, halides, and nitrates	-	1E+5	5E-5	2E-7	-	-
	Y, oxides and hydroxides	-	1E+5	5E-5	2E-7	-	-
48 Cadmium-107	D, see ^{104}Cd	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
	W, see ^{104}Cd	-	6E+4	2E-5	8E-8	-	-
	Y, see ^{104}Cd	-	5E+4	2E-5	7E-8	-	-
48 Cadmium-109	D, see ^{104}Cd	3E+2	4E+1	1E-8	-	-	-
		Kidneys (4E+2)	Kidneys (5E+1)	-	7E-11	6E-6	6E-5
	W, see ^{104}Cd	-	1E+2	5E-8	-	-	-
		Kidneys -	(1E+2)	-	2E-10	-	-
	Y, see ^{104}Cd	-	1E+2	5E-8	2E-10	-	-
	D, see ^{104}Cd	2E+1	2E+0	1E-9	-	-	-
		Kidneys (4E+1)	Kidneys (4E+0)	-	5E-12	5E-7	5E-6
	W, see ^{104}Cd	-	8E+0	4E-9	-	-	-
			Kidneys (1E+1)	-	2E-11	-	-
	Y, see ^{104}Cd	-	1E+1	5E-9	2E-11	-	-

48 Cadmium-113	D, see ^{104}Cd	2E+1 Kidneys (3E+1)	2E+0 Kidneys (3E+0)	9E-10	-	-	-
	W, see ^{104}Cd	-	8E+0 Kidneys (1E+1)	3E-9	-	-	-
		-	-	2E-11	-	-	-
	Y, see ^{104}Cd	-	1E+1	6E-9	2E-11	-	-
48 Cadmium-115m	D, see ^{104}Cd	3E+2	5E+1 Kidneys (8E+1)	2E-8	-	4E-6	4E-5
	W, see ^{104}Cd	-	1E+2	5E-8	2E-10	-	-
	Y, see ^{104}Cd	-	1E+2	6E-8	2E-10	-	-
48 Cadmium-115	D, see ^{104}Cd	9E+2 LLI wall (1E+3)	1E+3	6E-7	2E-9	-	-
	W, see ^{104}Cd	-	-	-	-	1E-5	1E-4
	Y, see ^{104}Cd	-	1E+3	5E-7	2E-9	-	-
48 Cadmium-117m	D, see ^{104}Cd	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
	W, see ^{104}Cd	-	2E+4	7E-6	2E-8	-	-
	Y, see ^{104}Cd	-	1E+4	6E-6	2E-8	-	-
48 Cadmium-117	D, see ^{104}Cd	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
	W, see ^{104}Cd	-	2E+4	7E-6	2E-8	-	-
	Y, see ^{104}Cd	-	1E+4	6E-6	2E-8	-	-
49 Indium-109	D, all compounds except those given for W	2E+4	4E+4	2E-5	6E-8	3E-4	3E-3
	W, oxides, hydroxides, halides, and nitrates	-	6E+4	3E-5	9E-8	-	-
49 Indium-110 ²	D, see ^{109}In	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
(69.1 min)	W, see ^{109}In	-	6E+4	2E-5	8E-8	-	-
49 Indium-110	D, see ^{109}In	5E+3	2E+4	7E-6	2E-8	7E-5	7E-4
(4.9 h)	W, see ^{109}In	-	2E+4	8E-6	3E-8	-	-
49 Indium-111	D, see ^{109}In	4E+3	6E+3	3E-6	9E-9	6E-5	6E-4
	W, see ^{109}In	-	6E+3	3E-6	9E-9	-	-

49	Indium-112 ²	D, see ¹⁰⁹ In W, see ¹⁰⁹ In	2E+5 -	6E+5 7E+5	3E-4 3E-4	9E-7 1E-6	2E-3 -	2E-2 -
49	Indium-113m ²	D, see ¹⁰⁹ In W, see ¹⁰⁹ In	5E+4 -	1E+5 2E+5	6E-5 8E-5	2E-7 3E-7	7E-4 -	7E-3 -
49	Indium-114m	D, see ¹⁰⁹ In	3E+2 LLI wall (4E+2)	6E+1 -	3E-8 -	9E-11 -	-	-
		W, see ¹⁰⁹ In	-	1E+2	4E-8	1E-10	-	-
49	Indium-115m	D, see ¹⁰⁹ In W, see ¹⁰⁹ In	1E+4 -	4E+4 5E+4	2E-5 2E-5	6E-8 7E-8	2E-4 -	2E-3 -
49	Indium-115	D, see ¹⁰⁹ In W, see ¹⁰⁹ In	4E+1 -	1E+0 5E+0	6E-10 2E-9	2E-12 8E-12	5E-7 -	5E-6 -
49	Indium-116m ²	D, see ¹⁰⁹ In W, see ¹⁰⁹ In	2E+4 -	8E+4 1E+5	3E-5 5E-5	1E-7 2E-7	3E-4 -	3E-3 -
49	Indium-117m ²	D, see ¹⁰⁹ In W, see ¹⁰⁹ In	1E+4 -	3E+4 4E+4	1E-5 2E-5	5E-8 6E-8	2E-4 -	2E-3 -
49	Indium-117 ²	D, see ¹⁰⁹ In W, see ¹⁰⁹ In	6E+4 -	2E+5 2E+5	7E-5 9E-5	2E-7 3E-7	8E-4 -	8E-3 -
49	Indium-119m ²	D, see ¹⁰⁹ In	4E+4 St. wall (5E+4)	1E+5 -	5E-5 -	2E-7 -	-	-
		W, see ¹⁰⁹ In	-	1E+5	6E-5	2E-7	-	-
50	Tin-110	D, all compounds except those given for W	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
		W, sulfides, oxides, hydroxides, halides, nitrates, and stannic phosphate	-	1E+4	5E-6	2E-8	-	-
50	Tin-111 ²	D, see ¹¹⁰ Sn W, see ¹¹⁰ Sn	7E+4 -	2E+5 3E+5	9E-5 1E-4	3E-7 4E-7	1E-3 -	1E-2 -
50	Tin-113	D, see ¹¹⁰ Sn	2E+3 LLI wall (2E+3)	1E+3	5E-7	2E-9	-	-
		W, see ¹¹⁰ Sn	-	5E+2	2E-7	8E-10	-	-

50 Tin-117m	D, see ^{110}Sn	2E+3 LLI wall (2E+3)	1E+3 Bone surf (2E+3)	5E-7 -	-	-	-
	W, see ^{110}Sn	-	1E+3	6E-7	2E-9	-	-
50 Tin-119m	D, see ^{110}Sn	3E+3 LLI wall (4E+3)	2E+3	1E-6	3E-9	-	-
	W, see ^{110}Sn	-	1E+3	4E-7	1E-9	-	-
50 Tin-121m	D, see ^{110}Sn	3E+3 LLI wall (4E+3)	9E+2	4E-7	1E-9	-	-
	W, see ^{110}Sn	-	5E+2	2E-7	8E-10	-	-
50 Tin-121	D, see ^{110}Sn	6E+3 LLI wall (6E+3)	2E+4	6E-6	2E-8	-	-
	W, see ^{110}Sn	-	1E+4	5E-6	2E-8	-	-
50 Tin-123m ²	D, see ^{110}Sn	5E+4	1E+5	5E-5	2E-7	7E-4	7E-3
	W, see ^{110}Sn	-	1E+5	6E-5	2E-7	-	-
50 Tin-123	D, see ^{110}Sn	5E+2 LLI wall (6E+2)	6E+2	3E-7	9E-10	-	-
	W, see ^{110}Sn	-	2E+2	7E-8	2E-10	-	-
50 Tin-125	D, see ^{110}Sn	4E+2 LLI wall (5E+2)	9E+2	4E-7	1E-9	-	-
	W, see ^{110}Sn	-	4E+2	1E-7	5E-10	-	-
50 Tin-126	D, see ^{110}Sn	3E+2	6E+1	2E-8	8E-11	4E-6	4E-5
	W, see ^{110}Sn	-	7E+1	3E-8	9E-11	-	-
50 Tin-127	D, see ^{110}Sn	7E+3	2E+4	8E-6	3E-8	9E-5	9E-4
	W, see ^{110}Sn	-	2E+4	8E-6	3E-8	-	-
50 Tin-128 ²	D, see ^{110}Sn	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
	W, see ^{110}Sn	-	4E+4	1E-5	5E-8	-	-

51 Antimony-115² D, all compounds

	except those given for W	8E+4	2E+5	1E-4	3E-7	1E-3	1E-2
	W, oxides, hydroxides, halides, sulfides, sulfates, and nitrates	-	3E+5	1E-4	4E-7	-	-
51 Antimony-116m ²	D, see ¹¹⁵ Sb	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
	W, see ¹¹⁵ Sb	-	1E+5	6E-5	2E-7	-	-
51 Antimony-116 ²	D, see ¹¹⁵ Sb	7E+4	3E+5	1E-4	4E-7	-	-
	St. wall (9E+4)	-	-	-	-	1E-3	1E-2
	W, see ¹¹⁵ Sb	-	3E+5	1E-4	5E-7	-	-
51 Antimony-117	D, see ¹¹⁵ Sb	7E+4	2E+5	9E-5	3E-7	9E-4	9E-3
	W, see ¹¹⁵ Sb	-	3E+5	1E-4	4E-7	-	-
51 Antimony-118m	D, see ¹¹⁵ Sb	6E+3	2E+4	8E-6	3E-8	7E-5	7E-4
	W, see ¹¹⁵ Sb	5E+3	2E+4	9E-6	3E-8	-	-
51 Antimony-119	D, see ¹¹⁵ Sb	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
	W, see ¹¹⁵ Sb	2E+4	3E+4	1E-5	4E-8	-	-
51 Antimony-120 ²	D, see ¹¹⁵ Sb (16 min)	1E+5	4E+5	2E-4	6E-7	-	-
	St. wall (2E+5)	-	-	-	-	2E-3	2E-2
	W, see ¹¹⁵ Sb	-	5E+5	2E-4	7E-7	-	-
51 Antimony-120	D, see ¹¹⁵ Sb (5.76 d)	1E+3	2E+3	9E-7	3E-9	1E-5	1E-4
	W, see ¹¹⁵ Sb	9E+2	1E+3	5E-7	2E-9	-	-
51 Antimony-122	D, see ¹¹⁵ Sb	8E+2	2E+3	1E-6	3E-9	-	-
	LLI wall (8E+2)	-	-	-	-	1E-5	1E-4
	W, see ¹¹⁵ Sb	7E+2	1E+3	4E-7	2E-9	-	-
51 Antimony-124m ²	D, see ¹¹⁵ Sb	3E+5	8E+5	4E-4	1E-6	3E-3	3E-2
	W, see ¹¹⁵ Sb	2E+5	6E+5	2E-4	8E-7	-	-
51 Antimony-124	D, see ¹¹⁵ Sb	6E+2	9E+2	4E-7	1E-9	7E-6	7E-5
	W, see ¹¹⁵ Sb	5E+2	2E+2	1E-7	3E-10	-	-
51 Antimony-125	D, see ¹¹⁵ Sb	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4
	W, see ¹¹⁵ Sb	-	5E+2	2E-7	7E-10	-	-
51 Antimony-126m ²	D, see ¹¹⁵ Sb	5E+4	2E+5	8E-5	3E-7	-	-

		St. wall (7E+4)	-	-	-	9E-4	9E-3
	W, see ^{115}Sb	-	2E+5	8E-5	3E-7	-	-
51 Antimony-126	D, see ^{115}Sb W, see ^{115}Sb	6E+2 5E+2	1E+3 5E+2	5E-7 2E-7	2E-9 7E-10	7E-6 -	7E-5 -
51 Antimony-127	D, see ^{115}Sb	8E+2 LLI wall (8E+2)	2E+3	9E-7	3E-9	-	-
	W, see ^{115}Sb	7E+2	9E+2	4E-7	1E-9	-	-
51 Antimony-128 ²	D, see ^{115}Sb (10.4 min)	8E+4 St. wall (1E+5)	4E+5	2E-4	5E-7	-	-
	W, see ^{115}Sb	-	4E+5	2E-4	6E-7	-	-
51 Antimony-128	D, see ^{115}Sb (9.01 h)	1E+3 W, see ^{115}Sb	4E+3 3E+3	2E-6 1E-6	6E-9 5E-9	2E-5 -	2E-4 -
51 Antimony-129	D, see ^{115}Sb W, see ^{115}Sb	3E+3	9E+3 9E+3	4E-6 4E-6	1E-8 1E-8	4E-5 -	4E-4 -
51 Antimony-130 ²	D, see ^{115}Sb W, see ^{115}Sb	2E+4 -	6E+4 8E+4	3E-5 3E-5	9E-8 1E-7	3E-4 -	3E-3 -
51 Antimony-131 ²	D, see ^{115}Sb	1E+4 Thyroid (2E+4)	2E+4 (4E+4)	1E-5 -	-	-	-
	W, see ^{115}Sb	-	2E+4 (4E+4)	1E-5 -	-	-	-
		-	2E+4 (4E+4)	1E-5 -	6E-8	2E-4	2E-3
52 Tellurium-116	D, all compounds except those given for W	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
	W, oxides, hydroxides, and nitrates	-	3E+4	1E-5	4E-8	-	-
52 Tellurium-121m	D, see ^{116}Te	5E+2 Bone surf (7E+2)	2E+2 Bone surf (4E+2)	8E-8 -	-	-	-
	W, see ^{116}Te	-	4E+2	2E-7	6E-10	-	-

52	Tellurium-121	D, see ^{116}Te W, see ^{116}Te	3E+3 -	4E+3 3E+3	2E-6 1E-6	6E-9 4E-9	4E-5 -	4E-4 -
52	Tellurium-123m	D, see ^{116}Te W, see ^{116}Te	6E+2 Bone surf (1E+3)	2E+2 Bone surf (5E+2)	9E-8 -	-	-	-
52	Tellurium-123	D, see ^{116}Te W, see ^{116}Te	5E+2 Bone surf (1E+3)	2E+2 Bone surf (5E+2)	8E-8 -	-	-	-
52	Tellurium-125m	D, see ^{116}Te W, see ^{116}Te	1E+3 Bone surf (1E+3)	4E+2 Bone surf (1E+3)	2E-7 -	-	-	-
52	Tellurium-127m	D, see ^{116}Te W, see ^{116}Te	6E+2 -	3E+2 (4E+2)	1E-7 -	-	9E-6 6E-10	9E-5 -
52	Tellurium-127	D, see ^{116}Te W, see ^{116}Te	7E+3 -	2E+4 2E+4	9E-6 7E-6	3E-8 2E-8	1E-4 -	1E-3 -
52	Tellurium-129m	D, see ^{116}Te W, see ^{116}Te	5E+2 -	6E+2 2E+2	3E-7 1E-7	9E-10 3E-10	7E-6 -	7E-5 -
52	Tellurium-129 ²	D, see ^{116}Te W, see ^{116}Te	3E+4 -	6E+4 7E+4	3E-5 3E-5	9E-8 1E-7	4E-4 -	4E-3 -
52	Tellurium-131m	D, see ^{116}Te W, see ^{116}Te	3E+2 Thyroid (6E+2)	4E+2 Thyroid (1E+3)	2E-7 -	-	-	-
						2E-9	8E-6	8E-5

		-	(9E+2)	-	1E-9	-	-
52 Tellurium-131 ²	D, see ¹¹⁶ Te	3E+3 Thyroid (6E+3)	5E+3 Thyroid (1E+4)	2E-6 -	-	-	-
		-	5E+3 Thyroid (1E+4)	2E-6 -	2E-8	8E-5	8E-4
	W, see ¹¹⁶ Te	-	5E+3 Thyroid (1E+4)	2E-6 -	-	-	-
		-	5E+3 Thyroid (1E+4)	2E-6 -	2E-8	-	-
52 Tellurium-132	D, see ¹¹⁶ Te	2E+2 Thyroid (7E+2)	2E+2 Thyroid (8E+2)	9E-8 -	-	-	-
		-	2E+2 Thyroid (6E+2)	9E-8 -	1E-9	9E-6	9E-5
	W, see ¹¹⁶ Te	-	2E+2 Thyroid (6E+2)	9E-8 -	-	-	-
		-	2E+2 Thyroid (6E+2)	9E-8 -	9E-10	-	-
52 Tellurium-133m ²	D, see ¹¹⁶ Te	3E+3 Thyroid (6E+3)	5E+3 Thyroid (1E+4)	2E-6 -	-	-	-
		-	5E+3 Thyroid (1E+4)	2E-6 -	2E-8	9E-5	9E-4
	W, see ¹¹⁶ Te	-	5E+3 Thyroid (1E+4)	2E-6 -	-	-	-
		-	5E+3 Thyroid (1E+4)	2E-6 -	2E-8	-	-
52 Tellurium-133 ²	D, see ¹¹⁶ Te	1E+4 Thyroid (3E+4)	2E+4 Thyroid (6E+4)	9E-6 -	-	-	-
		-	2E+4 Thyroid (6E+4)	9E-6 -	8E-8	4E-4	4E-3
	W, see ¹¹⁶ Te	-	2E+4 Thyroid (6E+4)	9E-6 -	8E-8	-	-
52 Tellurium-134 ²	D, see ¹¹⁶ Te	2E+4 Thyroid (2E+4)	2E+4 Thyroid (5E+4)	1E-5 -	-	-	-
		-	2E+4 Thyroid (5E+4)	1E-5 -	7E-8	3E-4	3E-3
	W, see ¹¹⁶ Te	-	2E+4 Thyroid (5E+4)	1E-5 -	-	-	-
		-	2E+4 Thyroid (5E+4)	1E-5 -	7E-8	-	-
53 Iodine-120m ²	D, all compounds	1E+4 Thyroid (1E+4)	2E+4 Thyroid (1E+4)	9E-6 -	3E-8	-	-
		-	-	-	-	2E-4	2E-3
53 Iodine-120 ²	D, all compounds	4E+3 Thyroid (8E+3)	9E+3 Thyroid (1E+4)	4E-6 -	-	-	-
		-	-	-	2E-8	1E-4	1E-3
53 Iodine-121	D, all compounds	1E+4	2E+4	8E-6	-	-	-

		Thyroid (3E+4)	Thyroid (5E+4)	-	7E-8	4E-4	4E-3
53 Iodine-123	D, all compounds	3E+3	6E+3	3E-6	-	-	-
		Thyroid (1E+4)	Thyroid (2E+4)	-	2E-8	1E-4	1E-3
53 Iodine-124	D, all compounds	5E+1	8E+1	3E-8	-	-	-
		Thyroid (2E+2)	Thyroid (3E+2)	-	4E-10	2E-6	2E-5
53 Iodine-125	D, all compounds	4E+1	6E+1	3E-8	-	-	-
		Thyroid (1E+2)	Thyroid (2E+2)	-	3E-10	2E-6	2E-5
53 Iodine-126	D, all compounds	2E+1	4E+1	1E-8	-	-	-
		Thyroid (7E+1)	Thyroid (1E+2)	-	2E-10	1E-6	1E-5
53 Iodine-128 ²	D, all compounds	4E+4	1E+5	5E-5	2E-7	-	-
		St. wall (6E+4)	-	-	-	8E-4	8E-3
53 Iodine-129	D, all compounds	5E+0	9E+0	4E-9	-	-	-
		Thyroid (2E+1)	Thyroid (3E+1)	-	4E-11	2E-7	2E-6
53 Iodine-130	D, all compounds	4E+2	7E+2	3E-7	-	-	-
		Thyroid (1E+3)	Thyroid (2E+3)	-	3E-9	2E-5	2E-4
53 Iodine-131	D, all compounds	3E+1	5E+1	2E-8	-	-	-
		Thyroid (9E+1)	Thyroid (2E+2)	-	2E-10	1E-6	1E-5
53 Iodine-132m ²	D, all compounds	4E+3	8E+3	4E-6	-	-	-
		Thyroid (1E+4)	Thyroid (2E+4)	-	3E-8	1E-4	1E-3
53 Iodine-132	D, all compounds	4E+3	8E+3	3E-6	-	-	-
		Thyroid (9E+3)	Thyroid (1E+4)	-	2E-8	1E-4	1E-3
53 Iodine-133	D, all compounds	1E+2	3E+2	1E-7	-	-	-
		Thyroid (5E+2)	Thyroid (9E+2)	-	1E-9	7E-6	7E-5
53 Iodine-134 ²	D, all compounds	2E+4	5E+4	2E-5	6E-8	-	-
		Thyroid					

			(3E+4)	-	-	-	4E-4	4E-3
53 Iodine-135	D, all compounds	8E+2 Thyroid (3E+3)	2E+3 Thyroid (4E+3)	7E-7 -	-	-	-	-
54 Xenon-120 ²	Submersion ¹	-	-	1E-5	4E-8	-	-	-
54 Xenon-121 ²	Submersion ¹	-	-	2E-6	1E-8	-	-	-
54 Xenon-122	Submersion ¹	-	-	7E-5	3E-7	-	-	-
54 Xenon-123	Submersion ¹	-	-	6E-6	3E-8	-	-	-
54 Xenon-125	Submersion ¹	-	-	2E-5	7E-8	-	-	-
54 Xenon-127	Submersion ¹	-	-	1E-5	6E-8	-	-	-
54 Xenon-129m	Submersion ¹	-	-	2E-4	9E-7	-	-	-
54 Xenon-131m	Submersion ¹	-	-	4E-4	2E-6	-	-	-
54 Xenon-133m	Submersion ¹	-	-	1E-4	6E-7	-	-	-
54 Xenon-133	Submersion ¹	-	-	1E-4	5E-7	-	-	-
54 Xenon-135m ²	Submersion ¹	-	-	9E-6	4E-8	-	-	-
54 Xenon-135	Submersion ¹	-	-	1E-5	7E-8	-	-	-
54 Xenon-138 ²	Submersion ¹	-	-	4E-6	2E-8	-	-	-
55 Cesium-125 ²	D, all compounds	5E+4 St. wall (9E+4)	1E+5	6E-5	2E-7	-	-	-
						1E-3	1E-2	
55 Cesium-127	D, all compounds	6E+4	9E+4	4E-5	1E-7	9E-4	9E-3	
55 Cesium-129	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3	
55 Cesium-130 ²	D, all compounds	6E+4 St. wall (1E+5)	2E+5	8E-5	3E-7	-	-	
						1E-3	1E-2	
55 Cesium-131	D, all compounds	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3	
55 Cesium-132	D, all compounds	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4	
55 Cesium-134m	D, all compounds	1E+5	1E+5	6E-5	2E-7	-	-	

		St. wall (1E+5)	-	-	-	2E-3	2E-2
55 Cesium-134	D, all compounds	7E+1	1E+2	4E-8	2E-10	9E-7	9E-6
55 Cesium-135m ² D, all compounds		1E+5	2E+5	8E-5	3E-7	1E-3	1E-2
55 Cesium-135	D, all compounds	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
55 Cesium-136	D, all compounds	4E+2	7E+2	3E-7	9E-10	6E-6	6E-5
55 Cesium-137	D, all compounds	1E+2	2E+2	6E-8	2E-10	1E-6	1E-5
55 Cesium-138 ²	D, all compounds	2E+4 St. wall (3E+4)	6E+4	2E-5	8E-8	-	-
56 Barium-126 ²	D, all compounds	6E+3	2E+4	6E-6	2E-8	8E-5	8E-4
56 Barium-128	D, all compounds	5E+2	2E+3	7E-7	2E-9	7E-6	7E-5
56 Barium-131m ² D, all compounds		4E+5 St. wall (5E+5)	1E+6	6E-4	2E-6	-	-
56 Barium-131	D, all compounds	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
56 Barium-133m	D, all compounds	2E+3 LLI wall (3E+3)	9E+3	4E-6	1E-8	-	-
56 Barium-133	D, all compounds	2E+3	7E+2	3E-7	9E-10	2E-5	2E-4
56 Barium-135m	D, all compounds	3E+3	1E+4	5E-6	2E-8	4E-5	4E-4
56 Barium-139 ²	D, all compounds	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
56 Barium-140	D, all compounds	5E+2 LLI wall (6E+2)	1E+3	6E-7	2E-9	-	-
56 Barium-141 ²	D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
56 Barium-142 ²	D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
57 Lanthanum-131 ² D, all compounds except those given for W		5E+4	1E+5	5E-5	2E-7	6E-4	6E-3

	W, oxides and hydroxides	-	2E+5	7E-5	2E-7	-	-
57 Lanthanum-132	D, see ^{131}La	3E+3	1E+4	4E-6	1E-8	4E-5	4E-4
	W, see ^{131}La	-	1E+4	5E-6	2E-8	-	-
57 Lanthanum-135	D, see ^{131}La	4E+4	1E+5	4E-5	1E-7	5E-4	5E-3
	W, see ^{131}La	-	9E+4	4E-5	1E-7	-	-
57 Lanthanum-137	D, see ^{131}La	1E+4	6E+1 Liver (7E+1)	3E-8	-	2E-4	2E-3
	W, see ^{131}La	-	3E+2 Liver (3E+2)	1E-7	-	-	-
57 Lanthanum-138	D, see ^{131}La	9E+2	4E+0	1E-9	5E-12	1E-5	1E-4
	W, see ^{131}La	-	1E+1	6E-9	2E-11	-	-
57 Lanthanum-140	D, see ^{131}La	6E+2	1E+3	6E-7	2E-9	9E-6	9E-5
	W, see ^{131}La	-	1E+3	5E-7	2E-9	-	-
57 Lanthanum-141	D, see ^{131}La	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
	W, see ^{131}La	-	1E+4	5E-6	2E-8	-	-
57 Lanthanum-142	^2D , see ^{131}La	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
	W, see ^{131}La	-	3E+4	1E-5	5E-8	-	-
57 Lanthanum-143	^2D , see ^{131}La	4E+4 St. wall (4E+4)	1E+5	4E-5	1E-7	-	-
	W, see ^{131}La	-	9E+4	4E-5	1E-7	-	-
58 Cerium-134	W, all compounds except those given for Y	5E+2 LLI wall (6E+2)	7E+2	3E-7	1E-9	-	-
	Y, oxides, hydroxides, and fluorides	-	7E+2	3E-7	9E-10	-	-
58 Cerium-135	W, see ^{134}Ce	2E+3	4E+3	2E-6	5E-9	2E-5	2E-4
	Y, see ^{134}Ce	-	4E+3	1E-6	5E-9	-	-
58 Cerium-137m	W, see ^{134}Ce	2E+3 LLI wall (2E+3)	4E+3	2E-6	6E-9	-	-
	Y, see ^{134}Ce	-	4E+3	2E-6	5E-9	-	-

58 Cerium-137	W, see ^{134}Ce Y, see ^{134}Ce	5E+4 -	1E+5 1E+5	6E-5 5E-5	2E-7 2E-7	7E-4 -	7E-3 -
58 Cerium-139	W, see ^{134}Ce Y, see ^{134}Ce	5E+3 -	8E+2 7E+2	3E-7 3E-7	1E-9 9E-10	7E-5 -	7E-4 -
58 Cerium-141	W, see ^{134}Ce	2E+3 LLI wall (2E+3)	7E+2	3E-7	1E-9	-	-
	Y, see ^{134}Ce	-	6E+2	2E-7	8E-10	-	-
58 Cerium-143	W, see ^{134}Ce	1E+3 LLI wall (1E+3)	2E+3	8E-7	3E-9	-	-
	Y, see ^{134}Ce	-	2E+3	7E-7	2E-9	-	-
58 Cerium-144	W, see ^{134}Ce	2E+2 LLI wall (3E+2)	3E+1	1E-8	4E-11	-	-
	Y, see ^{134}Ce	-	1E+1	6E-9	2E-11	-	-
59 Praseodymium-136 ²	W, all compounds except those given for Y	5E+4 St. wall (7E+4)	2E+5	1E-4	3E-7	-	-
	Y, oxides, hydroxides, carbides, and fluorides	-	2E+5	9E-5	3E-7	-	-
59 Praseodymium-137 ²	W, see ^{136}Pr Y, see ^{136}Pr	4E+4 -	2E+5 1E+5	6E-5 6E-5	2E-7 2E-7	5E-4 -	5E-3 -
59 Praseodymium-138m	W, see ^{136}Pr Y, see ^{136}Pr	1E+4 -	5E+4 4E+4	2E-5 2E-5	8E-8 6E-8	1E-4 -	1E-3 -
59 Praseodymium-139	W, see ^{136}Pr Y, see ^{136}Pr	4E+4 -	1E+5 1E+5	5E-5 5E-5	2E-7 2E-7	6E-4 -	6E-3 -
59 Praseodymium-142m ²	W, see ^{136}Pr Y, see ^{136}Pr	8E+4 -	2E+5 1E+5	7E-5 6E-5	2E-7 2E-7	1E-3 -	1E-2 -
59 Praseodymium-142	W, see ^{136}Pr Y, see ^{136}Pr	1E+3 -	2E+3 2E+3	9E-7 8E-7	3E-9 3E-9	1E-5 -	1E-4 -
59 Praseodymium-143	W, see ^{136}Pr	9E+2	8E+2	3E-7	1E-9	-	-

		LLI wall (1E+3)	-	-	-	2E-5	2E-4
	Y, see ^{136}Pr	-	7E+2	3E-7	9E-10	-	-
59 Praseodymium-144 ²	W, see ^{136}Pr	3E+4 St. wall (4E+4)	1E+5	5E-5	2E-7	-	-
	Y, see ^{136}Pr	-	-	-	-	6E-4	6E-3
59 Praseodymium-145	W, see ^{136}Pr	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
	Y, see ^{136}Pr	-	8E+3	3E-6	1E-8	-	-
59 Praseodymium-147 ²	W, see ^{136}Pr	5E+4 St. wall (8E+4)	2E+5	8E-5	3E-7	-	-
	Y, see ^{136}Pr	-	2E+5	8E-5	3E-7	-	-
60 Neodymium-136 ²	W, all compounds except those given for Y	1E+4	6E+4	2E-5	8E-8	2E-4	2E-3
	Y, oxides, hydroxides, carbides, and fluorides	-	5E+4	2E-5	8E-8	-	-
60 Neodymium-138	W, see ^{136}Nd	2E+3	6E+3	3E-6	9E-9	3E-5	3E-4
	Y, see ^{136}Nd	-	5E+3	2E-6	7E-9	-	-
60 Neodymium-139m	W, see ^{136}Nd	5E+3	2E+4	7E-6	2E-8	7E-5	7E-4
	Y, see ^{136}Nd	-	1E+4	6E-6	2E-8	-	-
60 Neodymium-139 ²	W, see ^{136}Nd	9E+4	3E+5	1E-4	5E-7	1E-3	1E-2
	Y, see ^{136}Nd	-	3E+5	1E-4	4E-7	-	-
60 Neodymium-141	W, see ^{136}Nd	2E+5	7E+5	3E-4	1E-6	2E-3	2E-2
	Y, see ^{136}Nd	-	6E+5	3E-4	9E-7	-	-
60 Neodymium-147	W, see ^{136}Nd	1E+3 LLI wall (1E+3)	9E+2	4E-7	1E-9	-	-
	Y, see ^{136}Nd	-	8E+2	4E-7	1E-9	-	-
60 Neodymium-149 ²	W, see ^{136}Nd	1E+4	3E+4	1E-5	4E-8	1E-4	1E-3
	Y, see ^{136}Nd	-	2E+4	1E-5	3E-8	-	-
60 Neodymium-151 ²	W, see ^{136}Nd	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3

	Y, see ^{136}Nd	-	2E+5	8E-5	3E-7	-	-
61 Promethium-141 ²	W, all compounds except those given for Y	5E+4 St. wall (6E+4)	2E+5	8E-5	3E-7	-	-
	Y, oxides, hydroxides, carbides, and fluorides	-	2E+5	7E-5	2E-7	-	-
61 Promethium-143	W, see ^{141}Pm Y, see ^{141}Pm	5E+3 -	6E+2 7E+2	2E-7 3E-7	8E-10 1E-9	7E-5	7E-4
61 Promethium-144	W, see ^{141}Pm Y, see ^{141}Pm	1E+3 -	1E+2 1E+2	5E-8 5E-8	2E-10 2E-10	2E-5	2E-4
61 Promethium-145	W, see ^{141}Pm Y, see ^{141}Pm	1E+4 - -	2E+2 (2E+2) 2E+2	7E-8 - 8E-8	- 3E-10 3E-10	1E-4	1E-3
61 Promethium-146	W, see ^{141}Pm Y, see ^{141}Pm	2E+3 - -	5E+1 4E+1 2E+2	2E-8 2E-8 -	7E-11 6E-11	2E-5	2E-4
61 Promethium-147	W, see ^{141}Pm Y, see ^{141}Pm	4E+3 LLI wall (5E+3) -	1E+2 Bone surf (2E+2) 1E+2	5E-8 - 3E-10	- 3E-10 7E-5	-	-
61 Promethium-148m	W, see ^{141}Pm Y, see ^{141}Pm	7E+2 - -	3E+2 3E+2 1E-7	1E-7 1E-7 5E-10	4E-10 5E-10	1E-5	1E-4
61 Promethium-148	W, see ^{141}Pm Y, see ^{141}Pm	4E+2 LLI wall (5E+2) -	5E+2 2E-7 -	2E-7 -	8E-10 - 7E-6	-	7E-5
61 Promethium-149	W, see ^{141}Pm Y, see ^{141}Pm	1E+3 LLI wall (1E+3) -	2E+3 8E-7 -	8E-7 3E-9 -	- 2E-5	-	2E-4
61 Promethium-150	W, see ^{141}Pm	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4

	Y, see ^{141}Pm	-	2E+4	7E-6	2E-8	-	-
61 Promethium-151	W, see ^{141}Pm	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
	Y, see ^{141}Pm	-	3E+3	1E-6	4E-9	-	-
62 Samarium-141 m	W, all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
62 Samarium-141 2	W, all compounds	5E+4	2E+5	8E-5	2E-7	-	-
	St. wall (6E+4)	-	-	-	8E-4	8E-3	
62 Samarium-142 2	W, all compounds	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
62 Samarium-145	W, all compounds	6E+3	5E+2	2E-7	7E-10	8E-5	8E-4
62 Samarium-146	W, all compounds	1E+1	4E-2	1E-11	-	-	-
	Bone surf (3E+1)	Bone surf (6E-2)	-	9E-14	3E-7	3E-6	
62 Samarium-147	W, all compounds	2E+1	4E-2	2E-11	-	-	-
	Bone surf (3E+1)	Bone surf (7E-2)	-	1E-13	4E-7	4E-6	
62 Samarium-151	W, all compounds	1E+4	1E+2	4E-8	-	-	-
	LLI wall (1E+4)	Bone surf (2E+2)	-	2E-10	2E-4	2E-3	
62 Samarium-153	W, all compounds	2E+3	3E+3	1E-6	4E-9	-	-
	LLI wall (2E+3)	-	-	-	3E-5	3E-4	
62 Samarium-155 2	W, all compounds	6E+4	2E+5	9E-5	3E-7	-	-
	St. wall (8E+4)	-	-	-	1E-3	1E-2	
62 Samarium-156	W, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
63 Europium-145	W, all compounds	2E+3	2E+3	8E-7	3E-9	2E-5	2E-4
63 Europium-146	W, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
63 Europium-147	W, all compounds	3E+3	2E+3	7E-7	2E-9	4E-5	4E-4
63 Europium-148	W, all compounds	1E+3	4E+2	1E-7	5E-10	1E-5	1E-4
63 Europium-149	W, all compounds	1E+4	3E+3	1E-6	4E-9	2E-4	2E-3

63	Europium-150	W, all compounds (12.62 h)	3E+3	8E+3	4E-6	1E-8	4E-5	4E-4
63	Europium-150	W, all compounds (34.2 y)	8E+2	2E+1	8E-9	3E-11	1E-5	1E-4
63	Europium-152m	W, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
63	Europium-152	W, all compounds	8E+2	2E+1	1E-8	3E-11	1E-5	1E-4
63	Europium-154	W, all compounds	5E+2	2E+1	8E-9	3E-11	7E-6	7E-5
63	Europium-155	W, all compounds	E+3	9E+1	4E-8	-	5E-5	5E-4
			-	Bone surf (1E+2)	-	2E-10	-	-
63	Europium-156	W, all compounds	6E+2	5E+2	2E-7	6E-10	8E-6	8E-5
63	Europium-157	W, all compounds	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
63	Europium-158 ²	W, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
64	Gadolinium-145 ²	D, all compounds except those given for W	5E+4 St. wall (5E+4)	2E+5	6E-5	2E-7	-	-
		W, oxides, hydroxides, and fluorides	-	2E+5	7E-5	2E-7	-	-
64	Gadolinium-146	D, see ¹⁴⁵ Gd W, see ¹⁴⁵ Gd	1E+3 - 3E+2	1E+2 1E-7 4E-10	5E-8 - -	2E-10 - -	2E-5 -	2E-4 -
64	Gadolinium-147	D, see ¹⁴⁵ Gd W, see ¹⁴⁵ Gd	2E+3 - 4E+3	4E+3 1E-6 5E-9	2E-6 - -	6E-9 - -	3E-5 -	3E-4 -
64	Gadolinium-148	D, see ¹⁴⁵ Gd	1E+1 Bone surf (2E+1)	8E-3 Bone surf (2E-2)	3E-12	-	-	-
		W, see ¹⁴⁵ Gd	-	3E-2 Bone surf (6E-2)	1E-11 - -	-	-	-
64	Gadolinium-149	D, see ¹⁴⁵ Gd	3E+3	2E+3	9E-7	3E-9	4E-5	4E-4

	W, see ^{145}Gd	-	2E+3	1E-6	3E-9	-	-
64 Gadolinium-151	D, see ^{145}Gd	6E+3	4E+2 Bone surf	2E-7	-	9E-5	9E-4
		-	(6E+2)	-	9E-10	-	-
64 Gadolinium-152	W, see ^{145}Gd	-	1E+3	5E-7	2E-9	-	-
	D, see ^{145}Gd	2E+1 Bone surf (3E+1)	1E-2 Bone surf (2E-2)	4E-12	-	-	-
64 Gadolinium-153	W, see ^{145}Gd	-	4E-2 Bone surf (8E-2)	2E-11	-	-	-
	D, see ^{145}Gd	5E+3	1E+2 Bone surf (2E+2)	6E-8	-	6E-5	6E-4
64 Gadolinium-159	W, see ^{145}Gd	-	6E+2	2E-7	8E-10	-	-
	D, see ^{145}Gd	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
65 Terbium-147 ²	W, all compounds	-	6E+3	2E-6	8E-9	-	-
	W, all compounds	9E+3	3E+4	1E-5	5E-8	1E-4	1E-3
65 Terbium-149	W, all compounds	5E+3	7E+2	3E-7	1E-9	7E-5	7E-4
65 Terbium-150	W, all compounds	5E+3	2E+4	9E-6	3E-8	7E-5	7E-4
65 Terbium-151	W, all compounds	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
65 Terbium-153	W, all compounds	5E+3	7E+3	3E-6	1E-8	7E-5	7E-4
65 Terbium-154	W, all compounds	2E+3	4E+3	2E-6	6E-9	2E-5	2E-4
65 Terbium-155	W, all compounds	6E+3	8E+3	3E-6	1E-8	8E-5	8E-4
65 Terbium-156m	W, all compounds (5.0h)	2E+4	3E+4	1E-5	4E-8	2E-4	2E-3
65 Terbium-156m	W, all compounds (24.4h)	7E+3	8E+3	3E-6	1E-8	1E-4	1E-3
65 Terbium-156	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4

65	Terbium-157	W, all compounds	5E+4 LLI wall (5E+4)	3E+2 Bone surf (6E+2)	1E-7	-	-	-
65	Terbium-158	W, all compounds	1E+3	2E+1	8E-9	3E-11	2E-5	2E-4
65	Terbium-160	W, all compounds	8E+2	2E+2	9E-8	3E-10	1E-5	1E-4
65	Terbium-161	W, all compounds	2E+3 LLI wall (2E+3)	2E+3	7E-7	2E-9	-	-
66	Dysprosium-155	W, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
66	Dysprosium-157	W, all compounds	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
66	Dysprosium-159	W, all compounds	1E+4	2E+3	1E-6	3E-9	2E-4	2E-3
66	Dysprosium-165	W, all compounds	1E+4	5E+4	2E-5	6E-8	2E-4	2E-3
66	Dysprosium-166	W, all compounds	6E+2 LLI wall (8E+2)	7E+2	3E-7	1E-9	-	-
67	Holmium-155 ² W	, all compounds	4E+4	2E+5	6E-5	2E-7	6E-4	6E-3
67	Holmium-157 ² W	, all compounds	3E+5	1E+6	6E-4	2E-6	4E-3	4E-2
67	Holmium-159 ² W	, all compounds	2E+5	1E+6	4E-4	1E-6	3E-3	3E-2
67	Holmium-161	W, all compounds	1E+5	4E+5	2E-4	6E-7	1E-3	1E-2
67	Holmium-162m ² W	, all compounds	5E+4	3E+5	1E-4	4E-7	7E-4	7E-3
67	Holmium-162 ² W	, all compounds	5E+5 St. wall (8E+5)	2E+6	1E-3	3E-6	-	-
67	Holmium-162 ² W	, all compounds	-	-	-	1E-2	1E-1	1E-1
67	Holmium-164m ² W	, all compounds	1E+5	3E+5	1E-4	4E-7	1E-3	1E-2
67	Holmium-164 ² W	, all compounds	2E+5 St. wall (2E+5)	6E+5	3E-4	9E-7	-	-
67	Holmium-164 ² W	, all compounds	-	-	-	3E-3	3E-2	3E-2
67	Holmium-166m	W, all compounds	6E+2	7E+0	3E-9	9E-12	9E-6	9E-5
67	Holmium-166	W, all compounds	9E+2 LLI wall	2E+3	7E-7	2E-9	-	-

		(9E+2)	-	-	-	1E-5	1E-4
67	Holmium-167 W, all compounds	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3
68	Erbium-161 W, all compounds	2E+4	6E+4	3E-5	9E-8	2E-4	2E-3
68	Erbium-165 W, all compounds	6E+4	2E+5	8E-5	3E-7	9E-4	9E-3
68	Erbium-169 W, all compounds	3E+3 LLI wall (4E+3)	3E+3	1E-6	4E-9	-	-
68	Erbium-171 W, all compounds	4E+3	1E+4	4E-6	1E-8	5E-5	5E-4
68	Erbium-172 W, all compounds	1E+3 LLI wall (1E+3)	1E+3	6E-7	2E-9	-	-
69	Thulium-162 ² W, all compounds	7E+4 St. wall (7E+4)	3E+5	1E-4	4E-7	-	-
		-	-	-	1E-3		1E-2
69	Thulium-166 W, all compounds	4E+3	1E+4	6E-6	2E-8	6E-5	6E-4
69	Thulium-167 W, all compounds	2E+3 LLI wall (2E+3)	2E+3	8E-7	3E-9	-	-
69	Thulium-170 W, all compounds	8E+2 LLI wall (1E+3)	2E+2	9E-8	3E-10	-	-
		-	-	-	1E-5		1E-4
69	Thulium-171 W, all compounds	1E+4 LLI wall (1E+4)	3E+2 Bone surf (6E+2)	1E-7	-	-	-
69	Thulium-172 W, all compounds	7E+2 LLI wall (8E+2)	1E+3	5E-7	2E-9	-	-
		-	-	-	1E-5		1E-4
69	Thulium-173 W, all compounds	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
69	Thulium-175 ² W, all compounds	7E+4 St. wall (9E+4)	3E+5	1E-4	4E-7	-	-
		-	-	-	1E-3		1E-2
70	Ytterbium-162 ² W, all compounds except those given for Y	7E+4	3E+5	1E-4	4E-7	1E-3	1E-2

	Y, oxides, hydroxides, and fluorides	-	3E+5	1E-4	4E-7	-	-
70 Ytterbium-166	W, see ^{162}Yb Y, see ^{162}Yb	1E+3 -	2E+3 2E+3	8E-7 8E-7	3E-9 3E-9	2E-5 -	2E-4 -
70 Ytterbium-167 ²	W, see ^{162}Yb Y, see ^{162}Yb	3E+5 -	8E+5 7E+5	3E-4 3E-4	1E-6 1E-6	4E-3 -	4E-2 -
70 Ytterbium-169	W, see ^{162}Yb Y, see ^{162}Yb	2E+3 -	8E+2 7E+2	4E-7 3E-7	1E-9 1E-9	2E-5 -	2E-4 -
70 Ytterbium-175	W, see ^{162}Yb Y, see ^{162}Yb	3E+3 LLI wall (3E+3) -	4E+3 - 3E+3	1E-6 - 1E-6	5E-9 - 5E-9	- 4E-5 -	- 4E-4 -
70 Ytterbium-177 ²	W, see ^{162}Yb Y, see ^{162}Yb	2E+4 -	5E+4 5E+4	2E-5 2E-5	7E-8 6E-8	2E-4 -	2E-3 -
70 Ytterbium-178 ²	W, see ^{162}Yb Y, see ^{162}Yb	1E+4 -	4E+4 4E+4	2E-5 2E-5	6E-8 5E-8	2E-4 -	2E-3 -
71 Lutetium-169	W, all compounds except those given for Y	3E+3	4E+3	2E-6	6E-9	3E-5	3E-4
	Y, oxides, hydroxides, and fluorides	-	4E+3	2E-6	6E-9	-	-
71 Lutetium-170	W, see ^{169}Lu Y, see ^{169}Lu	1E+3 -	2E+3 2E+3	9E-7 8E-7	3E-9 3E-9	2E-5 -	2E-4 -
71 Lutetium-171	W, see ^{169}Lu Y, see ^{169}Lu	2E+3 -	2E+3 2E+3	8E-7 8E-7	3E-9 3E-9	3E-5 -	3E-4 -
71 Lutetium-172	W, see ^{169}Lu Y, see ^{169}Lu	1E+3 -	1E+3 1E+3	5E-7 5E-7	2E-9 2E-9	1E-5 -	1E-4 -
71 Lutetium-173	W, see ^{169}Lu	5E+3	3E+2 Bone surf (5E+2)	1E-7 -	-	7E-5 6E-10	7E-4 -
	Y, see ^{169}Lu	-	3E+2	1E-7	4E-10	-	-
71 Lutetium-174m	W, see ^{169}Lu	2E+3 LLI wall	2E+2 Bone surf	1E-7	-	-	-

		(3E+3)	(3E+2)	-	5E-10	4E-5	4E-4
	Y, see ^{169}Lu	-	2E+2	9E-8	3E-10	-	-
71 Lutetium-174	W, see ^{169}Lu	5E+3	1E+2 Bone surf (2E+2)	5E-8 - -	-	7E-5	7E-4
	Y, see ^{169}Lu	-	2E+2	6E-8	2E-10	-	-
71 Lutetium-176m	W, see ^{169}Lu Y, see ^{169}Lu	8E+3	3E+4 2E+4	1E-5 9E-6	3E-8 3E-8	1E-4 -	1E-3 -
71 Lutetium-176	W, see ^{169}Lu	7E+2	5E+0 Bone surf (1E+1)	2E-9 - -	-	1E-5	1E-4
	Y, see ^{169}Lu	-	8E+0	3E-9	1E-11	-	-
71 Lutetium-177m	W, see ^{169}Lu	7E+2	1E+2 Bone surf (1E+2)	5E-8 - -	-	1E-5	1E-4
	Y, see ^{169}Lu	-	8E+1	3E-8	1E-10	-	-
71 Lutetium-177	W, see ^{169}Lu	2E+3 LLI wall (3E+3)	2E+3	9E-7	3E-9	-	-
	Y, see ^{169}Lu	-	2E+3	9E-7	3E-9	-	-
71 Lutetium-178m ²	W, see ^{169}Lu	5E+4 St. wall (6E+4)	2E+5	8E-5	3E-7	-	-
	Y, see ^{169}Lu	-	2E+5	7E-5	2E-7	-	-
71 Lutetium-178 ²	W, see ^{169}Lu	4E+4 St. wall (4E+4)	1E+5	5E-5	2E-7	-	-
	Y, see ^{169}Lu	-	1E+5	5E-5	2E-7	-	-
71 Lutetium-179	W, see ^{169}Lu Y, see ^{169}Lu	6E+3	2E+4 2E+4	8E-6 6E-6	3E-8 3E-8	9E-5 -	9E-4 -

72 Hafnium-170	D, all compounds except those given for W	3E+3	6E+3	2E-6	8E-9	4E-5	4E-4
	W, oxides, hydroxides, carbides, and nitrates	-	5E+3	2E-6	6E-9	-	-
72 Hafnium-172	D, see ^{170}Hf	1E+3	9E+0	4E-9	-	2E-5	2E-4
		-	Bone surf (2E+1)	-	3E-11	-	-
	W, see ^{170}Hf	-	4E+1	2E-8	-	-	-
		-	Bone surf (6E+1)	-	8E-11	-	-
72 Hafnium-173	D, see ^{170}Hf W, see ^{170}Hf	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
		-	1E+4	5E-6	2E-8	-	-
72 Hafnium-175	D, see ^{170}Hf	3E+3	9E+2	4E-7	-	4E-5	4E-4
		-	Bone surf (1E+3)	-	1E-9	-	-
	W, see ^{170}Hf	-	1E+3	5E-7	2E-9	-	-
72 Hafnium-177m ²	D, see ^{170}Hf W, see ^{170}Hf	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
		-	9E+4	4E-5	1E-7	-	-
72 Hafnium-178m	D, see ^{170}Hf	3E+2	1E+0	5E-10	-	3E-6	3E-5
		-	Bone surf (2E+0)	-	3E-12	-	-
	W, see ^{170}Hf	-	5E+0	2E-9	-	-	-
		-	Bone surf (9E+0)	-	1E-11	-	-
72 Hafnium-179m	D, see ^{170}Hf	1E+3	3E+2	1E-7	-	1E-5	1E-4
		-	Bone surf (6E+2)	-	8E-10	-	-
	W, see ^{170}Hf	-	6E+2	3E-7	8E-10	-	-
72 Hafnium-180m	D, see ^{170}Hf	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3

	W, see ^{170}Hf	-	3E+4	1E-5	4E-8	-	-
72 Hafnium-181	D, see ^{170}Hf	1E+3	2E+2 Bone surf (4E+2)	7E-8 -	-	2E-5	2E-4
		-	4E+2	2E-7	6E-10	-	-
	W, see ^{170}Hf	-	4E+2	2E-7	6E-10	-	-
72 Hafnium-182m ²	D, see ^{170}Hf	4E+4	9E+4	4E-5	1E-7	5E-4	5E-3
	W, see ^{170}Hf	-	1E+5	6E-5	2E-7	-	-
72 Hafnium-182	D, see ^{170}Hf	2E+2 Bone surf (4E+2)	8E-1 Bone surf (2E+0)	3E-10 -	-	-	-
		-	3E+0 Bone surf (7E+0)	1E-9 -	2E-12	5E-6	5E-5
72 Hafnium-183 ²	D, see ^{170}Hf	2E+4	5E+4	2E-5	6E-8	3E-4	3E-3
	W, see ^{170}Hf	-	6E+4	2E-5	8E-8	-	-
72 Hafnium-184	D, see ^{170}Hf	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
	W, see ^{170}Hf	-	6E+3	3E-6	9E-9	-	-
73 Tantalum-172 ²	W, all compounds except those given for Y	4E+4	1E+5	5E-5	2E-7	5E-4	5E-3
	Y, elemental Ta, oxides, hydroxides, halides, carbides, nitrates, and nitrides	-	1E+5	4E-5	1E-7	-	-
73 Tantalum-173	W, see ^{172}Ta	7E+3	2E+4	8E-6	3E-8	9E-5	9E-4
	Y, see ^{172}Ta	-	2E+4	7E-6	2E-8	-	-
73 Tantalum-174 ²	W, see ^{172}Ta	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
	Y, see ^{172}Ta	-	9E+4	4E-5	1E-7	-	-
73 Tantalum-175	W, see ^{172}Ta	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
	Y, see ^{172}Ta	-	1E+4	6E-6	2E-8	-	-
73 Tantalum-176	W, see ^{172}Ta	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
	Y, see ^{172}Ta	-	1E+4	5E-6	2E-8	-	-

73 Tantalum-177 W, see ^{172}Ta Y, see ^{172}Ta	1E+4 -	2E+4 2E+4	8E-6 7E-6	3E-8 2E-8	2E-4 -	2E-3 -
73 Tantalum-178 W, see ^{172}Ta Y, see ^{172}Ta	2E+4 -	9E+4 7E+4	4E-5 3E-5	1E-7 1E-7	2E-4 -	2E-3 -
73 Tantalum-179 W, see ^{172}Ta Y, see ^{172}Ta	2E+4 -	5E+3 9E+2	2E-6 4E-7	8E-9 1E-9	3E-4 -	3E-3 -
73 Tantalum-180m W, see ^{172}Ta Y, see ^{172}Ta	2E+4 -	7E+4 6E+4	3E-5 2E-5	9E-8 8E-8	3E-4 -	3E-3 -
73 Tantalum-180 W, see ^{172}Ta Y, see ^{172}Ta	1E+3 -	4E+2 2E+1	2E-7 1E-8	6E-10 3E-11	2E-5 -	2E-4 -
73 Tantalum-182m ² W, see ^{172}Ta Y, see ^{172}Ta	2E+5 St. wall (2E+5) -	5E+5 -	2E-4 -	8E-7 -	- 3E-3	- 3E-2
73 Tantalum-182 W, see ^{172}Ta Y, see ^{172}Ta	8E+2 -	3E+2 1E+2	1E-7 6E-8	5E-10 2E-10	1E-5 -	1E-4 -
73 Tantalum-183 W, see ^{172}Ta Y, see ^{172}Ta	9E+2 LLI wall (1E+3) -	1E+3 -	5E-7 -	2E-9 -	- 2E-5	- 2E-4
73 Tantalum-184 W, see ^{172}Ta Y, see ^{172}Ta	2E+3 -	5E+3 5E+3	2E-6 2E-6	8E-9 7E-9	3E-5 -	3E-4 -
73 Tantalum-185 ² W, see ^{172}Ta Y, see ^{172}Ta	3E+4 -	7E+4 6E+4	3E-5 3E-5	1E-7 9E-8	4E-4 -	4E-3 -
73 Tantalum-186 ² W, see ^{172}Ta Y, see ^{172}Ta	5E+4 St. wall (7E+4) -	2E+5 -	1E-4 -	3E-7 -	- 1E-3	- 1E-2
74 Tungsten-176 D, all compounds	1E+4	5E+4	2E-5	7E-8	1E-4	1E-3
74 Tungsten-177 D, all compounds	2E+4	9E+4	4E-5	1E-7	3E-4	3E-3
74 Tungsten-178 D, all compounds	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
74 Tungsten-179 ² D, all compounds	5E+5	2E+6	7E-4	2E-6	7E-3	7E-2

74 Tungsten-181	D, all compounds	2E+4	3E+4	1E-5	5E-8	2E-4	2E-3
74 Tungsten-185	D, all compounds	2E+3 LLI wall (3E+3)	7E+3	3E-6	9E-9	-	-
		-	-	-	4E-5	4E-4	
74 Tungsten-187	D, all compounds	2E+3	9E+3	4E-6	1E-8	3E-5	3E-4
74 Tungsten-188	D, all compounds	4E+2 LLI wall (5E+2)	1E+3	5E-7	2E-9	-	-
75 Rhenium-177 ²	D, all compounds except those given for W	9E+4 St. wall (1E+5)	3E+5	1E-4	4E-7	-	-
		-	-	-	2E-3	2E-2	
W, oxides, hydroxides, and nitrates		-	4E+5	1E-4	5E-7	-	-
75 Rhenium-178 ²	D, see ¹⁷⁷ Re	7E+4 St. wall (1E+5)	3E+5	1E-4	4E-7	-	-
		-	-	-	1E-3	1E-2	
W, see ¹⁷⁷ Re		-	3E+5	1E-4	4E-7	-	-
75 Rhenium-181	D, see ¹⁷⁷ Re W, see ¹⁷⁷ Re	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
		-	9E+3	4E-6	1E-8	-	-
75 Rhenium-182	D, see ¹⁷⁷ Re (12.7h) W, see ¹⁷⁷ Re	7E+3	1E+4	5E-6	2E-8	9E-5	9E-4
		-	2E+4	6E-6	2E-8	-	-
75 Rhenium-182	D, see ¹⁷⁷ Re (64.0h) W, see ¹⁷⁷ Re	1E+3	2E+3	1E-6	3E-9	2E-5	2E-4
		-	2E+3	9E-7	3E-9	-	-
75 Rhenium-184m	D, see ¹⁷⁷ Re W, see ¹⁷⁷ Re	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
		-	4E+2	2E-7	6E-10	-	-
75 Rhenium-184	D, see ¹⁷⁷ Re W, see ¹⁷⁷ Re	2E+3	4E+3	1E-6	5E-9	3E-5	3E-4
		-	1E+3	6E-7	2E-9	-	-
75 Rhenium-186m	D, see ¹⁷⁷ Re	1E+3 St. wall (2E+3)	2E+3 St. wall (2E+3)	7E-7	-	-	-
		-	3E-9	2E-5	2E-4		
W, see ¹⁷⁷ Re		-	2E+2	6E-8	2E-10	-	-
75 Rhenium-186	D, see ¹⁷⁷ Re W, see ¹⁷⁷ Re	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
		-	2E+3	7E-7	2E-9	-	-

75 Rhenium-187	D, see ^{177}Re	6E+5	8E+5 St. wall (9E+5)	4E-4 -	-	8E-3	8E-2
		-		-	1E-6	-	-
	W, see ^{177}Re	-	1E+5	4E-5	1E-7	-	-
75 Rhenium-188m ²	D, see ^{177}Re	8E+4	1E+5	6E-5	2E-7	1E-3	1E-2
	W, see ^{177}Re	-	1E+5	6E-5	2E-7	-	-
75 Rhenium-188	D, see ^{177}Re	2E+3	3E+3	1E-6	4E-9	2E-5	2E-4
	W, see ^{177}Re	-	3E+3	1E-6	4E-9	-	-
75 Rhenium-189	D, see ^{177}Re	3E+3	5E+3	2E-6	7E-9	4E-5	4E-4
	W, see ^{177}Re	-	4E+3	2E-6	6E-9	-	-
76 Osmium-180 ²	D, all compounds except those given for W and Y	1E+5	4E+5	2E-4	5E-7	1E-3	1E-2
	W, halides and nitrates	-	5E+5	2E-4	7E-7	-	-
	Y, oxides and hydroxides	-	5E+5	2E-4	6E-7	-	-
76 Osmium-181 ²	D, see ^{180}Os	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
	W, see ^{180}Os	-	5E+4	2E-5	6E-8	-	-
	Y, see ^{180}Os	-	4E+4	2E-5	6E-8	-	-
76 Osmium-182	D, see ^{180}Os	2E+3	6E+3	2E-6	8E-9	3E-5	3E-4
	W, see ^{180}Os	-	4E+3	2E-6	6E-9	-	-
	Y, see ^{180}Os	-	4E+3	2E-6	6E-9	-	-
76 Osmium-185	D, see ^{180}Os	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4
	W, see ^{180}Os	-	8E+2	3E-7	1E-9	-	-
	Y, see ^{180}Os	-	8E+2	3E-7	1E-9	-	-
76 Osmium-189m	D, see ^{180}Os	8E+4	2E+5	1E-4	3E-7	1E-3	1E-2
	W, see ^{180}Os	-	2E+5	9E-5	3E-7	-	-
	Y, see ^{180}Os	-	2E+5	7E-5	2E-7	-	-
76 Osmium-191m	D, see ^{180}Os	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
	W, see ^{180}Os	-	2E+4	8E-6	3E-8	-	-
	Y, see ^{180}Os	-	2E+4	7E-6	2E-8	-	-
76 Osmium-191	D, see ^{180}Os	2E+3 LLI wall (3E+3)	2E+3	9E-7	3E-9	-	-
		-	-	-	3E-5	3E-4	

	W, see ^{180}Os Y, see ^{180}Os	-	2E+3 1E+3	7E-7 6E-7	2E-9 2E-9	-	-
76 Osmium-193	D, see ^{180}Os	2E+3 LLI wall (2E+3)	5E+3	2E-6	6E-9	-	-
	W, see ^{180}Os Y, see ^{180}Os	-	3E+3 3E+3	1E-6 1E-6	4E-9 4E-9	-	-
76 Osmium-194	D, see ^{180}Os	4E+2 LLI wall (6E+2)	4E+1	2E-8	6E-11	-	-
	W, see ^{180}Os Y, see ^{180}Os	-	6E+1 8E+0	2E-8 3E-9	8E-11 1E-11	-	-
77 Iridium-182	D, all compounds except those given for W and Y	2D 4E+4 St. wall (4E+4)	1E+5	6E-5	2E-7	-	-
	W, halides, nitrates, and metallic iridium	-	2E+5	6E-5	2E-7	-	-
	Y, oxides and hydroxides	-	1E+5	5E-5	2E-7	-	-
77 Iridium-184	D, see ^{182}Ir	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
	W, see ^{182}Ir	-	3E+4	1E-5	5E-8	-	-
	Y, see ^{182}Ir	-	3E+4	1E-5	4E-8	-	-
77 Iridium-185	D, see ^{182}Ir	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
	W, see ^{182}Ir	-	1E+4	5E-6	2E-8	-	-
	Y, see ^{182}Ir	-	1E+4	4E-6	1E-8	-	-
77 Iridium-186	D, see ^{182}Ir	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
	W, see ^{182}Ir	-	6E+3	3E-6	9E-9	-	-
	Y, see ^{182}Ir	-	6E+3	2E-6	8E-9	-	-
77 Iridium-187	D, see ^{182}Ir	1E+4	3E+4	1E-5	5E-8	1E-4	1E-3
	W, see ^{182}Ir	-	3E+4	1E-5	4E-8	-	-
	Y, see ^{182}Ir	-	3E+4	1E-5	4E-8	-	-
77 Iridium-188	D, see ^{182}Ir	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
	W, see ^{182}Ir	-	4E+3	1E-6	5E-9	-	-
	Y, see ^{182}Ir	-	3E+3	1E-6	5E-9	-	-
77 Iridium-189	D, see ^{182}Ir	5E+3 LLI wall (5E+3)	5E+3	2E-6	7E-9	-	-
		-	-	-	7E-5	7E-4	

	W, see ^{182}Ir Y, see ^{182}Ir	-	4E+3 4E+3	2E-6 1E-6	5E-9 5E-9	-	-
77 Iridium-190m ² D, see ^{182}Ir		2E+5	2E+5	8E-5	3E-7	2E-3	2E-2
W, see ^{182}Ir		-	2E+5	9E-5	3E-7	-	-
Y, see ^{182}Ir		-	2E+5	8E-5	3E-7	-	-
77 Iridium-190 D, see ^{182}Ir		1E+3	9E+2	4E-7	1E-9	1E-5	1E-4
W, see ^{182}Ir		-	1E+3	4E-7	1E-9	-	-
Y, see ^{182}Ir		-	9E+2	4E-7	1E-9	-	-
77 Iridium-192m D, see ^{182}Ir		3E+3	9E+1	4E-8	1E-10	4E-5	4E-4
W, see ^{182}Ir		-	2E+2	9E-8	3E-10	-	-
Y, see ^{182}Ir		-	2E+1	6E-9	2E-11	-	-
77 Iridium-192 D, see ^{182}Ir		9E+2	3E+2	1E-7	4E-10	1E-5	1E-4
W, see ^{182}Ir		-	4E+2	2E-7	6E-10	-	-
Y, see ^{182}Ir		-	2E+2	9E-8	3E-10	-	-
77 Iridium-194m D, see ^{182}Ir		6E+2	9E+1	4E-8	1E-10	9E-6	9E-5
W, see ^{182}Ir		-	2E+2	7E-8	2E-10	-	-
Y, see ^{182}Ir		-	1E+2	4E-8	1E-10	-	-
77 Iridium-194 D, see ^{182}Ir		1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
W, see ^{182}Ir		-	2E+3	9E-7	3E-9	-	-
Y, see ^{182}Ir		-	2E+3	8E-7	3E-9	-	-
77 Iridium-195m D, see ^{182}Ir		8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
W, see ^{182}Ir		-	3E+4	1E-5	4E-8	-	-
Y, see ^{182}Ir		-	2E+4	9E-6	3E-8	-	-
77 Iridium-195 D, see ^{182}Ir		1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
W, see ^{182}Ir		-	5E+4	2E-5	7E-8	-	-
Y, see ^{182}Ir		-	4E+4	2E-5	6E-8	-	-
78 Platinum-186 D, all compounds		1E+4	4E+4	2E-5	5E-8	2E-4	2E-3
78 Platinum-188 D, all compounds		2E+3	2E+3	7E-7	2E-9	2E-5	2E-4
78 Platinum-189 D, all compounds		1E+4	3E+4	1E-5	4E-8	1E-4	1E-3
78 Platinum-191 D, all compounds		4E+3	8E+3	4E-6	1E-8	5E-5	5E-4
78 Platinum-193m D, all compounds		3E+3 LLI wall (3E+4)	6E+3	3E-6	8E-9	-	-
78 Platinum-193 D, all compounds		4E+4 LLI wall	2E+4	1E-5	3E-8	-	-

		(5E+4)	-	-	-	6E-4	6E-3
78 Platinum-195m D, all compounds	2E+3 LLI wall (2E+3)	4E+3	2E-6	6E-9	-	-	-
		-	-	-	3E-5		3E-4
78 Platinum-197m ² D, all compounds	2E+4	4E+4	2E-5	6E-8	2E-4		2E-3
78 Platinum-197 D, all compounds	3E+3	1E+4	4E-6	1E-8	4E-5		4E-4
78 Platinum-199 ² D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4		7E-3
78 Platinum-200 D, all compounds	1E+3	3E+3	1E-6	5E-9	2E-5		2E-4
79 Gold-193 D, all compounds except those given for W and Y	9E+3	3E+4	1E-5	4E-8	1E-4		1E-3
W, halides and nitrates	-	2E+4	9E-6	3E-8	-		-
Y, oxides and hydroxides	-	2E+4	8E-6	3E-8	-		-
79 Gold-194 D, see ¹⁹³ Au	3E+3	8E+3	3E-6	1E-8	4E-5		4E-4
W, see ¹⁹³ Au	-	5E+3	2E-6	8E-9	-		-
Y, see ¹⁹³ Au	-	5E+3	2E-6	7E-9	-		-
79 Gold-195 D, see ¹⁹³ Au	5E+3	1E+4	5E-6	2E-8	7E-5		7E-4
W, see ¹⁹³ Au	-	1E+3	6E-7	2E-9	-		-
Y, see ¹⁹³ Au	-	4E+2	2E-7	6E-10	-		-
79 Gold-198m D, see ¹⁹³ Au	1E+3	3E+3	1E-6	4E-9	1E-5		1E-4
W, see ¹⁹³ Au	-	1E+3	5E-7	2E-9	-		-
Y, see ¹⁹³ Au	-	1E+3	5E-7	2E-9	-		-
79 Gold-198 D, see ¹⁹³ Au	1E+3	4E+3	2E-6	5E-9	2E-5		2E-4
W, see ¹⁹³ Au	-	2E+3	8E-7	3E-9	-		-
Y, see ¹⁹³ Au	-	2E+3	7E-7	2E-9	-		-
79 Gold-199 D, see ¹⁹³ Au	3E+3 LLI wall (3E+3)	9E+3	4E-6	1E-8	-		-
W, see ¹⁹³ Au	-	4E+3	2E-6	6E-9	-		-
Y, see ¹⁹³ Au	-	4E+3	2E-6	5E-9	-		-
79 Gold-200m D, see ¹⁹³ Au	1E+3	4E+3	1E-6	5E-9	2E-5		2E-4

	W, see ^{193}Au	-	3E+3	1E-6	4E-9	-	-
	Y, see ^{193}Au	-	2E+4	1E-6	3E-9	-	-
79 Gold-200 ²	D, see ^{193}Au	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
	W, see ^{193}Au	-	8E+4	3E-5	1E-7	-	-
	Y, see ^{193}Au	-	7E+4	3E-5	1E-7	-	-
79 Gold-201 ²	D, see ^{193}Au	7E+4	2E+5	9E-5	3E-7	-	-
		St. wall (9E+4)	-	-	-	1E-3	1E-2
	W, see ^{193}Au	-	2E+5	1E-4	3E-7	-	-
	Y, see ^{193}Au	-	2E+5	9E-5	3E-7	-	-
80 Mercury-193m	Vapor	-	8E+3	4E-6	1E-8	-	-
	Organic D	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
	D, sulfates	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
	W, oxides, hydroxides, halides, nitrates, and sulfides	-	8E+3	3E-6	1E-8	-	-
80 Mercury-193	Vapor	-	3E+4	1E-5	4E-8	-	-
	Organic D	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
	D, see $^{193\text{m}}\text{Hg}$	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
	W, see $^{193\text{m}}\text{Hg}$	-	4E+4	2E-5	6E-8	-	-
80 Mercury-194	Vapor	-	3E+1	1E-8	4E-11	-	-
	Organic D	2E+1	3E+1	1E-8	4E-11	2E-7	2E-6
	D, see $^{193\text{m}}\text{Hg}$	8E+2	4E+1	2E-8	6E-11	1E-5	1E-4
	W, see $^{193\text{m}}\text{Hg}$	-	1E+2	5E-8	2E-10	-	-
80 Mercury-195m	Vapor	-	4E+3	2E-6	6E-9	-	-
	Organic D	3E+3	6E+3	3E-6	8E-9	4E-5	4E-4
	D, see $^{193\text{m}}\text{Hg}$	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
	W, see $^{193\text{m}}\text{Hg}$	-	4E+3	2E-6	5E-9	-	-
80 Mercury-195	Vapor	-	3E+4	1E-5	4E-8	-	-
	Organic D	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
	D, see $^{193\text{m}}\text{Hg}$	1E+4	4E+4	1E-5	5E-8	2E-4	2E-3
	W, see $^{193\text{m}}\text{Hg}$	-	3E+4	1E-5	5E-8	-	-

80	Mercury-197m	Vapor Organic D	- 4E+3	5E+3 9E+3	2E-6 4E-6	7E-9 1E-8	- 5E-5	- 5E-4
		D, see ^{193m} Hg	3E+3	7E+3	3E-6	1E-8	4E-5	4E-4
		W, see ^{193m} Hg	-	5E+3	2E-6	7E-9	-	-
80	Mercury-197	Vapor Organic D	- 7E+3	8E+3 1E+4	4E-6 6E-6	1E-8 2E-8	- 9E-5	- 9E-4
		D, see ^{193m} Hg	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
		W, see ^{193m} Hg	-	9E+3	4E-6	1E-8	-	-
80	Mercury-199m ²	Vapor Organic D	- 6E+4 St. wall (1E+5)	8E+4 2E+5	3E-5 7E-5	1E-7 2E-7	-	-
		D, see ^{193m} Hg	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
		W, see ^{193m} Hg	-	2E+5	7E-5	2E-7	-	-
80	Mercury-203	Vapor Organic D	- 5E+2	8E+2 8E+2	4E-7 3E-7	1E-9 1E-9	- 7E-6	- 7E-5
		D, see ^{193m} Hg	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
		W, see ^{193m} Hg	-	1E+3	5E-7	2E-9	-	-
81	Thallium-194m ²	D, all compounds	5E+4 St. wall (7E+4)	2E+5	6E-5	2E-7	-	-
			-	-	-	-	1E-3	1E-2
81	Thallium-194 ²	D, all compounds	3E+5 St. wall (3E+5)	6E+5	2E-4	8E-7	-	-
			-	-	-	-	4E-3	4E-2
81	Thallium-195 ²	D, all compounds	6E+4	1E+5	5E-5	2E-7	9E-4	9E-3
81	Thallium-197	D, all compounds	7E+4	1E+5	5E-5	2E-7	1E-3	1E-2
81	Thallium-198m ²	D, all compounds	3E+4	5E+4	2E-5	8E-8	4E-4	4E-3
81	Thallium-198	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
81	Thallium-199	D, all compounds	6E+4	8E+4	4E-5	1E-7	9E-4	9E-3
81	Thallium-200	D, all compounds	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3

81 Thallium-201 D, all compounds	2E+4	2E+4	9E-6	3E-8	2E-4	2E-3
81 Thallium-202 D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
81 Thallium-204 D, all compounds	2E+3	2E+3	9E-7	3E-9	2E-5	2E-4
82 Lead-195m ² D, all compounds	6E+4	2E+5	8E-5	3E-7	8E-4	8E-3
82 Lead-198 D, all compounds	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
82 Lead-199 ² D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
82 Lead-200 D, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
82 Lead-201 D, all compounds	7E+3	2E+4	8E-6	3E-8	1E-4	1E-3
82 Lead-202m D, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
82 Lead-202 D, all compounds	1E+2	5E+1	2E-8	7E-11	2E-6	2E-5
82 Lead-203 D, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
82 Lead-205 D, all compounds	4E+3	1E+3	6E-7	2E-9	5E-5	5E-4
82 Lead-209 D, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
82 Lead-210 D, all compounds	6E-1 Bone surf (1E+0)	2E-1 Bone surf (4E-1)	1E-10	-	-	-
82 Lead-211 ² D, all compounds	1E+4	6E+2	3E-7	9E-10	2E-4	2E-3
82 Lead-212 D, all compounds	8E+1 Bone surf (1E+2)	3E+1	1E-8	5E-11	-	-
					2E-6	2E-5
82 Lead-214 ² D, all compounds	9E+3	8E+2	3E-7	1E-9	1E-4	1E-3
83 Bismuth-200 ² D, nitrates W, all other compounds	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
	-	1E+5	4E-5	1E-7	-	-
83 Bismuth-201 ² D, see ²⁰⁰ Bi W, see ²⁰⁰ Bi	1E+4 -	3E+4 4E+4	1E-5 2E-5	4E-8 5E-8	2E-4 -	2E-3 -
83 Bismuth-202 ² D, see ²⁰⁰ Bi W, see ²⁰⁰ Bi	1E+4 -	4E+4 8E+4	2E-5 3E-5	6E-8 1E-7	2E-4 -	2E-3 -

83	Bismuth-203	D, see ^{200}Bi W, see ^{200}Bi	2E+3 -	7E+3 6E+3	3E-6 3E-6	9E-9 9E-9	3E-5 -	3E-4 -
83	Bismuth-205	D, see ^{200}Bi W, see ^{200}Bi	1E+3 -	3E+3 1E+3	1E-6 5E-7	3E-9 2E-9	2E-5 -	2E-4 -
83	Bismuth-206	D, see ^{200}Bi W, see ^{200}Bi	6E+2 -	1E+3 9E+2	6E-7 4E-7	2E-9 1E-9	9E-6 -	9E-5 -
83	Bismuth-207	D, see ^{200}Bi W, see ^{200}Bi	1E+3 -	2E+3 4E+2	7E-7 1E-7	2E-9 5E-10	1E-5 -	1E-4 -
83	Bismuth-210m	D, see ^{200}Bi W, see ^{200}Bi	4E+1 Kidneys (6E+1) -	5E+0 Kidneys (6E+0) 7E-1	2E-9 - 3E-10	- 9E-12 9E-13	- 8E-7 -	- 8E-6 -
83	Bismuth-210	D, see ^{200}Bi W, see ^{200}Bi	8E+2 - -	2E+2 Kidneys (4E+2) 3E+1	1E-7 - 1E-8	- 5E-10 4E-11	1E-5 - -	1E-4 - -
83	Bismuth-212 ²	D, see ^{200}Bi W, see ^{200}Bi	5E+3 - -	2E+2 3E+2 4E+2	1E-7 1E-7 1E-7	3E-10 4E-10 5E-10	7E-5 - -	7E-4 - -
83	Bismuth-213 ²	D, see ^{200}Bi W, see ^{200}Bi	7E+3 - -	3E+2 4E+2 4E+2	1E-7 1E-7 1E-7	4E-10 5E-10 -	1E-4 - -	1E-3 - -
83	Bismuth-214 ²	D, see ^{200}Bi W, see ^{200}Bi	2E+4 St. wall (2E+4) -	8E+2 - 9E-2	3E-7 - 4E-7	1E-9 - 1E-9	- 3E-4 -	- 3E-3 -
84	Polonium-203 ²	D, all compounds except those given for W	3E+4	6E+4	3E-5	9E-8	3E-4	3E-3
		W, oxides, hydroxides, and nitrates	-	9E+4	4E-5	1E-7	-	-
84	Polonium-205 ²	D, see ^{203}Po W, see ^{203}Po	2E+4 - -	4E+4 7E+4 3E-5	2E-5 1E-7 -	5E-8 1E-7 -	3E-4 - -	3E-3 - -
84	Polonium-207	D, see ^{203}Po W, see ^{203}Po	8E+3 - -	3E+4 3E+4 1E-5	1E-5 1E-5 4E-8	3E-8 4E-8 -	1E-4 - -	1E-3 - -

84 Polonium-210	D, see ^{203}Po W, see ^{203}Po	3E+0 -	6E-1 6E-1	3E-10 3E-10	9E-13 9E-13	4E-8 -	4E-7 -
85 Astatine-207 ²	D, halides W	6E+3 -	3E+3 2E+3	1E-6 9E-7	4E-9 3E-9	8E-5 -	8E-4 -
85 Astatine-211	D, halides W	1E+2 -	8E+1 5E+1	3E-8 2E-8	1E-10 8E-11	2E-6 -	2E-5 -
86 Radon-220	With daughters removed	-	2E+4	7E-6	2E-8	-	-
	With daughters present	-	2E+1 (or 12 working level months)	9E-9 (or 1.0 working level)	3E-11	-	-
86 Radon-222	With daughters removed	-	1E+4	4E-6	1E-8	-	-
	With daughters present	-	1E+2 (or 4 working level months)	3E-8 (or 0.33 working level)	1E-10	-	-
87 Francium-222 ²	D, all compounds	2E+3	5E+2	2E-7	6E-10	3E-5	3E-4
87 Francium-223 ²	D, all compounds	6E+2	8E+2	3E-7	1E-9	8E-6	8E-5
88 Radium-223	W, all compounds	5E+0	7E-1	3E-10	9E-13	-	
	Bone surf (9E+0)	-	-	-	-	1E-7	1E-6
88 Radium-224	W, all compounds	8E+0	2E+0	7E-10	2E-12	-	
	Bone surf (2E+1)	-	-	-	-	2E-7	2E-6
88 Radium-225	W, all compounds	8E+0	7E-1	3E-10	9E-13	-	
	Bone surf (2E+1)	-	-	-	-	2E-7	2E-6
88 Radium-226	W, all compounds	2E+0	6E-1	3E-10	9E-13	-	

	Bone surf (5E+0)	-	-	-	6E-8	6E-7
88 Radium-227 ²	W, all compounds	2E+4	1E+4	6E-6	-	-
	Bone surf (2E+4)	Bone surf (2E+4)	-	3E-8	3E-4	3E-3
88 Radium-228	W, all compounds	2E+0	1E+0	5E-10	2E-12	-
	Bone surf (4E+0)	-	-	-	6E-8	6E-7
89 Actinium-224	D, all compounds except those given for W and Y	2E+3	3E+1	1E-8	-	-
	LLI wall (2E+3)	Bone surf (4E+1)	-	5E-11	3E-5	3E-4
	W, halides and nitrates	-	5E+1	2E-8	7E-11	-
	Y, oxides and hydroxides	-	5E+1	2E-8	6E-11	-
89 Actinium-225	D, see ²²⁴ Ac	5E+1	3E-1	1E-10	-	-
	LLI wall (5E+1)	Bone surf (5E-1)	-	7E-13	7E-7	7E-6
	W, see ²²⁴ Ac	-	6E-1	3E-10	9E-13	-
	Y, see ²²⁴ Ac	-	6E-1	3E-10	9E-13	-
89 Actinium-226	D, see ²²⁴ Ac	1E+2	3E+0	1E-9	-	-
	LLI wall (1E+2)	Bone surf (4E+0)	-	5E-12	2E-6	2E-5
	W, see ²²⁴ Ac	-	5E+0	2E-9	7E-12	-
	Y, see ²²⁴ Ac	-	5E+0	2E-9	6E-12	-
89 Actinium-227	D, see ²²⁴ Ac	2E-1	4E-4	2E-13	-	-
	Bone surf	Bone surf				

		(4E-1)	(8E-4)	-	1E-15	5E-9	5E-8
	W, see ^{224}Ac	-	2E-3 Bone surf	7E-13	-	-	-
	Y, see ^{224}Ac	-	(3E-3) 4E-3	- 2E-12	4E-15 6E-15	-	-
89 Actinium-228	D, see ^{224}Ac	2E+3	9E+0 Bone surf (2E+1)	4E-9 - 2E-11	-	3E-5	3E-4
	W, see ^{224}Ac	-	4E+1 Bone surf (6E+1)	2E-8 - 8E-11	-	-	-
	Y, see ^{224}Ac	-	4E+1	2E-8	6E-11	-	-
90 Thorium-226 ²	W, all compounds except those given for Y	5E+3 St. wall (5E+3)	2E+2	6E-8	2E-10	-	-
	Y, oxides and hydroxides	-	1E+2	6E-8	2E-10	-	-
90 Thorium-227	W, see ^{226}Th	1E+2	3E-1	1E-10	5E-13	2E-6	2E-5
	Y, see ^{226}Th	-	3E-1	1E-10	5E-13	-	-
90 Thorium-228	W, see ^{226}Th	6E+0 Bone surf (1E+1)	1E-2 Bone surf (2E-2)	4E-12 - 3E-14	-	-	-
	Y, see ^{226}Th	-	2E-2	7E-12	2E-14	-	-
90 Thorium-229	W, see ^{226}Th	6E-1 Bone surf (1E+0)	9E-4 Bone surf (2E-3)	4E-13 - 3E-15	-	-	-
	Y, see ^{226}Th	-	2E-3 Bone surf (3E-3)	1E-12 - 4E-15	-	-	-
90 Thorium-230	W, see ^{226}Th	4E+0	6E-3	3E-12	-	-	-

		Bone surf (9E+0)	Bone surf (2E-2)	-	2E-14	1E-7	1E-6
	Y, see ^{226}Th	-	2E-2 Bone surf (2E-2)	6E-12 -	-	-	-
		-	(2E-2)	-	3E-14	-	-
90 Thorium-231	W, see ^{226}Th	4E+3	6E+3	3E-6	9E-9	5E-5	5E-4
	Y, see ^{226}Th	-	6E+3	3E-6	9E-9	-	-
90 Thorium-232	W, see ^{226}Th	7E-1 Bone surf (2E+0)	1E-3 Bone surf (3E-3)	5E-13 -	-	-	-
	Y, see ^{226}Th	-	3E-3 Bone surf (4E-3)	1E-12 -	4E-15	3E-8	3E-7
		-	(4E-3)	-	6E-15	-	-
90 Thorium-234	W, see ^{226}Th	3E+2 LLI wall (4E+2)	2E+2	8E-8	3E-10	-	-
	Y, see ^{226}Th	-	-	-	5E-6	5E-5	5E-5
91 Protactinium-227 ²	W, all compounds except those given for Y	4E+3	1E+2	5E-8	2E-10	5E-5	5E-4
	Y, oxides and hydroxides	-	1E+2	4E-8	1E-10	-	-
91 Protactinium-228	W, see ^{227}Pa	1E+3	1E+1 Bone surf	5E-9	-	2E-5	2E-4
	Y, see ^{226}Pa	-	(2E+1)	-	3E-11	-	-
		-	1E+1	5E-9	2E-11	-	-
91 Protactinium-230	W, see ^{227}Pa	6E+2 Bone surf (9E+2)	5E+0	2E-9	7E-12	-	-
	Y, see ^{227}Pa	-	-	-	1E-5	1E-4	1E-4
91 Protactinium-231	W, see ^{227}Pa	2E-1 Bone surf	2E-3 Bone surf	6E-13	-	-	-

		(5E-1)	(4E-3)	-	6E-15	6E-9	6E-8
	Y, see ^{226}Pa	-	4E-3 Bone surf (6E-3)	2E-12 - 8E-15	- -	- -	-
91 Protactinium-232	W, see ^{227}Pa	1E+3	2E+1 Bone surf (6E+1)	9E-9 - 8E-11	- 2E-5 -	2E-4	
	Y, see ^{227}Pa	-	6E+1 Bone surf (7E+1)	2E-8 - 1E-10	- -	- -	
91 Protactinium-233	W, see ^{227}Pa	1E+3 LLI wall (2E+3)	7E+2	3E-7	1E-9 -	-	
	Y, see ^{227}Pa	-	6E+2	2E-7	8E-10 -	-	-
91 Protactinium-234	W, see ^{227}Pa	2E+3	8E+3	3E-6	1E-8 9E-9	3E-5 -	3E-4
	Y, see ^{227}Pa	-	7E+3	3E-6	- -	- -	
92 Uranium-230	D, UF_6 , UO_2F_2 , $\text{UO}_2(\text{NO}_3)_2$	4E+0 Bone surf (6E+0)	4E-1 Bone surf (6E-1)	2E-10 - 8E-13	- -	- 8E-8	- 8E-7
	W, UO_3 , UF_4 , UCl_4	-	4E-1	1E-10	5E-13 -	-	-
	Y, UO_2 , U_3O_8	-	3E-1	1E-10	4E-13 -	-	-
92 Uranium-231	D, see ^{230}U	5E+3 LLI wall (4E+3)	8E+3	3E-6	1E-8 -	-	-
	W, see ^{230}U	-	6E+3	2E-6	8E-9 -	-	-
	Y, see ^{230}U	-	5E+3	2E-6	6E-9 -	-	-
92 Uranium-232	D, see ^{230}U	2E+0 Bone surf (4E+0)	2E-1 Bone surf (4E-1)	9E-11 -	- -	-	-
				6E-13	6E-8	6E-7	

	W, see ^{230}U	-	4E-1	2E-10	5E-13	-	-
	Y, see ^{230}U	-	8E-3	3E-12	1E-14	-	-
92 Uranium-233	D, see ^{230}U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10 - -	-	-	-
	W, see ^{230}U	-	7E-1	3E-10	1E-12	-	-
	Y, see ^{230}U	-	4E-2	2E-11	5E-14	-	-
92 Uranium-234 ³	D, see ^{230}U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10 - -	-	-	-
	W, see ^{230}U	-	7E-1	3E-10	1E-12	-	-
	Y, see ^{230}U	-	4E-2	2E-11	5E-1	-	-
92 Uranium-235 ³	D, see ^{230}U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	6E-10 - -	-	-	-
	W, see ^{230}U	-	8E-1	3E-10	1E-12	-	-
	Y, see ^{230}U	-	4E-2	2E-11	6E-14	-	-
92 Uranium-236	D, see ^{230}U	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10 - -	-	-	-
	W, see ^{230}U	-	8E-1	3E-10	1E-12	-	-
	Y, see ^{230}U	-	4E-2	2E-11	6E-14	-	-
92 Uranium-237	D, see ^{230}U	2E+3 LLI wall (2E+3)	3E+3	1E-6	4E-9	-	-
	W, see ^{230}U	-	2E+3	7E-7	2E-9	-	-
	Y, see ^{230}U	-	2E+3	6E-7	2E-9	-	-
92 Uranium-238 ³	D, see ^{230}U	1E+1	1E+0	6E-10	-	-	-

		Bone surf (2E+1)	Bone surf (2E+0)	-	3E-12	3E-7	3E-6
	W, see ^{230}U	-	8E-1	3E-10	1E-12	-	-
	Y, see ^{230}U	-	4E-2	2E-11	6E-14	-	-
92 Uranium-239 ²	D, see ^{230}U	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3
	W, see ^{230}U	-	2E+5	7E-5	2E-7	-	-
	Y, see ^{230}U	-	2E+5	6E-5	2E-7	-	-
92 Uranium-240	D, see ^{230}U	1E+3	4E+3	2E-6	5E-9	2E-5	2E-4
	W, see ^{230}U	-	3E+3	1E-6	4E-9	-	-
	Y, see ^{230}U	-	2E+3	1E-6	3E-9	-	-
92 Uranium-natural ³	D, see ^{230}U	1E+1	1E+0	5E-10	-	-	-
	Bone surf (2E+1)	(2E+0)	-	3E-12	3E-7	3E-6	
	W, see ^{230}U	-	8E-1	3E-10	9E-13	-	-
	Y, see ^{230}U	-	5E-2	2E-11	9E-14	-	-
93 Neptunium-232 ²	W, all compounds	1E+5	2E+3	7E-7	-	2E-3	2E-2
		-	Bone surf (5E+2)	-	6E-9	-	-
93 Neptunium-233 ²	W, all compounds	8E+5	3E+6	1E-3	4E-6	1E-2	1E-1
93 Neptunium-234	W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
93 Neptunium-235	W, all compounds	2E+4	8E+2	3E-7	-	-	-
	LLI wall	(2E+4)	Bone surf (1E+3)	-	2E-9	3E-4	3E-3
93 Neptunium-236	W, all compounds (1.15E+5y)	3E+0	2E-2	9E-12	-	-	-
	Bone surf (6E+0)	(5E-2)	Bone surf (5E-2)	-	8E-14	9E-8	9E-7
93 Neptunium-236	W, all compounds (22.5h)	3E+3	3E+1	1E-8	-	-	-
	Bone surf (4E+3)	(7E+1)	Bone surf (7E+1)	-	1E-10	5E-5	5E-4

93 Neptunium-237	W, all compounds	5E-1 Bone surf (1E+0)	4E-3 Bone surf (1E-2)	2E-12 -	-	-	-
93 Neptunium-238	W, all compounds	1E+3 -	6E+1 Bone surf (2E+2)	3E-8 -	1E-14 2E-10	2E-8 -	2E-7 -
93 Neptunium-239	W, all compounds	2E+3 LLI wall (2E+3)	2E+3 -	9E-7 -	3E-9 -	-	-
93 Neptunium-240 ²	W, all compounds	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
94 Plutonium-234	W, all compounds except PuO ₂ Y, PuO ₂	8E+3 -	2E+2 2E+2	9E-8 8E-8	3E-10 3E-10	1E-4 -	1E-3 -
94 Plutonium-235 ²	W, see ²³⁴ Pu Y, see ²³⁴ Pu	9E+5 -	3E+6 3E+6	1E-3 1E-3	4E-6 3E-6	1E-2 -	1E-1 -
94 Plutonium-236	W, see ²³⁴ Pu Y, see ²³⁴ Pu	2E+0 -	2E-2 4E-2	8E-12 -	5E-14 5E-14	6E-8 -	6E-7 -
94 Plutonium-237	W, see ²³⁴ Pu Y, see ²³⁴ Pu	1E+4 -	3E+3 3E+3	1E-6 1E-6	5E-9 4E-9	2E-4 -	2E-3 -
94 Plutonium-238	W, see ²³⁴ Pu Y, see ²³⁴ Pu	9E-1 -	7E-3 2E-2	3E-12 8E-12	2E-14 2E-14	2E-8 -	2E-7 -
94 Plutonium-239	W, see ²³⁴ Pu Y, see ²³⁴ Pu	8E-1 -	6E-3 2E-2	3E-12 7E-12	2E-14 2E-14	2E-8 -	2E-7 -

94 Plutonium-240	W, see ^{234}Pu	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
	Y, see ^{234}Pu	-	2E-2 Bone surf (2E-2)	7E-12	-	-	-
		-	-	2E-14	2E-8	2E-7	
94 Plutonium-241	W, see ^{234}Pu	4E+1 Bone surf (7E+1)	3E-1 Bone surf (6E-1)	1E-10	-	-	-
	Y, see ^{234}Pu	-	8E-1 Bone surf (1E+0)	3E-10	-	-	-
		-	-	8E-13	1E-6	1E-5	
94 Plutonium-242	W, see ^{234}Pu	8E-1 Bone surf (1E+0)	7E-3 Bone surf (1E-2)	3E-12	-	-	-
	Y, see ^{234}Pu	-	2E-2 Bone surf (2E-2)	7E-12	-	-	-
		-	-	2E-14	2E-8	2E-7	
94 Plutonium-243	W, see ^{234}Pu	2E+4	4E+4 4E+4	2E-5 2E-5	5E-8 5E-8	2E-4	2E-3
	Y, see ^{234}Pu	-	-	-	-	-	-
94 Plutonium-244	W, see ^{234}Pu	8E-1 Bone surf (2E+0)	7E-3 Bone surf (1E-2)	3E-12	-	-	-
	Y, see ^{234}Pu	-	2E-2 Bone surf (2E-2)	7E-12	-	-	-
		-	-	2E-14	2E-8	2E-7	
94 Plutonium-245	W, see ^{234}Pu	2E+3	5E+3 4E+3	2E-6 2E-6	6E-9 6E-9	3E-5	3E-4
	Y, see ^{234}Pu	-	-	-	-	-	-
94 Plutonium-246	W, see ^{234}Pu	4E+2	3E+2	1E-7	4E-10	-	-

	LLI wall (4E+2)	-	-	-	6E-6	6E-5
Y, see ^{234}Pu	-	3E+2	1E-7	4E-10	-	-
95 Americium-237 ² W, all compounds	8E+4	3E+5	1E-4	4E-7	1E-3	1E-2
95 Americium-238 ² W, all compounds	4E+4	3E+3	1E-6	-	5E-4	5E-3
		Bone surf (6E+3)	-	9E-9	-	-
95 Americium-239 W, all compounds	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
95 Americium-240 W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
95 Americium-241 W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
			-	2E-14	2E-8	2E-7
95 Americium-242m W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
			-	2E-14	2E-8	2E-7
95 Americium-242 W, all compounds	4E+3	8E+1 Bone surf (9E+1)	4E-8	-	5E-5	5E-4
			-	1E-10	-	-
95 Americium-243 W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
			-	2E-14	2E-8	2E-7
95 Americium-244m ² W, all compounds	6E+4 St. wall (8E+4)	4E+3 Bone surf (7E+3)	2E-6	-	-	-
			-	1E-8	1E-3	1E-2
95 Americium-244 W, all compounds	3E+3	2E+2 Bone surf (3E+2)	8E-8	-	4E-5	4E-4
			-	4E-10	-	-
95 Americium-245 W, all compounds	3E+4	8E+4	3E-5	1E-7	4E-4	4E-3

95 Americium-246m ²	W, all compounds	5E+4 St. wall (6E+4)	2E+5	8E-5	3E-7	-	-
			-	-	-	8E-4	8E-3
95 Americium-246 ² W, all compounds		3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
96 Curium-238 W, all compounds		2E+4	1E+3	5E-7	2E-9	2E-4	2E-3
96 Curium-240 W, all compounds		6E+1 Bone surf (8E+1)	6E-1 Bone surf (6E-1)	2E-10	-	-	-
96 Curium-241 W, all compounds		1E+3	3E+1 Bone surf (4E+1)	1E-8	-	2E-5	2E-4
		-	-	5E-11	-	-	-
96 Curium-242 W, all compounds		3E+1 Bone surf (5E+1)	3E-1 Bone surf (3E-1)	1E-10	-	-	-
96 Curium-243 W, all compounds		1E+0 Bone surf (2E+0)	9E-3 Bone surf (2E-2)	4E-12	-	-	-
96 Curium-244 W, all compounds		1E+0 Bone surf (3E+0)	1E-2 Bone surf (2E-2)	5E-12	-	-	-
96 Curium-245 W, all compounds		7E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
96 Curium-246 W, all compounds		7E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
96 Curium-247 W, all compounds		8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
96 Curium-248 W, all compounds		2E-1 Bone	2E-3 Bone	7E-13	-	-	-

	surf (4E-1)	surf (3E-3)	-	4E-15	5E-9	5E-8
96 Curium-249 ² W, all compounds	5E+4	2E+4	7E-6	-	7E-4	7E-3
	Bone surf (3E+4)	-		4E-8	-	-
96 Curium-250 W, all compounds	4E-2	3E-4	1E-13	-	-	-
	Bone surf (6E-2)	Bone surf (5E-4)	-	8E-16	9E-10	9E-9
97 Berkelium-245 W, all compounds	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
97 Berkelium-246 W, all compounds	3E+3	3E+3	1E-6	4E-9	4E-5	4E-4
97 Berkelium-247 W, all compounds	5E-1	4E-3	2E-12	-	-	-
	Bone surf (1E+0)	Bone surf (9E-3)	-	1E-14	2E-8	2E-7
97 Berkelium-249 W, all compounds	2E+2	2E+0	7E-10	-	-	-
	Bone surf (5E+2)	Bone surf (4E+0)	-	5E-12	6E-6	6E-5
97 Berkelium-250 W, all compounds	9E+3	3E+2	1E-7	-	1E-4	1E-3
	Bone surf (7E+2)	-	1E-9	-	-	-
98 Californium-244 ² W, all compounds except those given for Y	3E+4	6E+2	2E-7	8E-10	-	-
	St. wall (3E+4)	-	-	-	4E-4	4E-3
Y, oxides and hydroxides	-	6E+2	2E-7	8E-10	-	-
98 Californium-246 W, see ²⁴⁴ Cf Y, see ²⁴⁴ Cf	4E+2	9E+0	4E-9	1E-11	5E-6	5E-5
	-	9E+0	4E-9	1E-11	-	-
98 Californium-248 W, see ²⁴⁴ Cf	8E+0	6E-2	3E-11	-	-	-
	Bone surf (2E+1)	Bone surf (1E-1)	-	2E-13	2E-7	2E-6

	Y, see ^{244}Cf	-	1E-1	4E-11	1E-13	-	-
98 Californium-249	W, see ^{244}Cf	5E-1 Bone surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 -	-	-	-
	Y, see ^{244}Cf	-	1E-2 Bone surf (1E-2)	4E-12 -	-	-	-
		-		2E-14	-	-	-
98 Californium-250	W, see ^{244}Cf	1E+0 Bone surf (2E+0)	9E-3 Bone surf (2E-2)	4E-12 -	-	-	-
	Y, see ^{244}Cf	-	3E-2	1E-11	4E-14	-	-
98 Californium-251	W, see ^{244}Cf	5E-1 Bone surf (1E+0)	4E-3 Bone surf (9E-3)	2E-12 -	-	-	-
	Y, see ^{244}Cf	-	1E-2 Bone surf (1E-2)	4E-12 -	-	-	-
		-		2E-14	-	-	-
98 Californium-252	W, see ^{244}Cf	2E+0 Bone surf (5E+0)	2E-2 Bone surf (4E-2)	8E-12 -	-	-	-
	Y, see ^{244}Cf	-	3E-2	1E-11	5E-14	-	-
98 Californium-253	W, see ^{244}Cf	2E+2 Bone surf (4E+2)	2E+0 -	8E-10 -	3E-12 -	-	-
	Y, see ^{244}Cf	-	2E+0 -	7E-10 -	2E-12 -	-	-
98 Californium-254	W, see ^{244}Cf	2E+0	2E-2	9E-12	3E-14	3E-8	3E-7
	Y, see ^{244}Cf	-	2E-2	7E-12	2E-14	-	-
99 Einsteinium-250	W, all compounds	4E+4	5E+2 Bone surf	2E-7	-	6E-4	6E-3

		-	(1E+3)	-	2E-9	-	-
99 Einsteinium-251	W, all compounds	7E+3	9E+2	4E-7	-	1E-4	1E-3
		-	Bone surf (1E+3)	-	2E-9	-	-
99 Einsteinium-253	W, all compounds 2E-5	2E+2	1E+0	6E-10	2E-12	2E-6	
99 Einsteinium-254m	W, all compounds	3E+2 LLI wall (3E+2)	1E+1	4E-9	1E-11	-	-
99 Einsteinium-254	W, all compounds	8E+0	7E-2	3E-11	-	-	-
		Bone surf (2E+1)	Bone surf (1E-1)	-	2E-13	2E-7	2E-6
		-	-	-	-	-	-
100 Fermium-252	W, all compounds 6E-5	5E+2	1E+1	5E-9	2E-11	6E-6	
100 Fermium-253	W, all compounds 1E-4	1E+3	1E+1	4E-9	1E-11	1E-5	
100 Fermium-254	W, all compounds 4E-4	3E+3	9E+1	4E-8	1E-10	4E-5	
100 Fermium-255	W, all compounds 7E-5	5E+2	2E+1	9E-9	3E-11	7E-6	
100 Fermium-257	W, all compounds	2E+1	2E-1	7E-11	-	-	
		Bone surf (4E+1)	Bone surf (2E-1)	-	3E-13	5E-7	5E-6
101 Mendelevium-257	W, all compounds	7E+3	8E+1	4E-8	-	1E-4	1E-3
		-	Bone surf (9E+1)	-	1E-10	-	-
101 Mendelevium-258	W, all compounds	3E+1	2E-1	1E-10	-	-	-
		Bone surf (5E+1)	Bone surf (3E-1)	-	5E-13	6E-7	6E-6

Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission

and with radioactive half-life less than 2 hours Submersion ¹	-	2E+2	1E-7	1E-9	-	-
Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life greater than 2 hours. . . . 1E-7	-	2E-1	1E-10	1E-12	1E-8	
Any single radionuclide not listed above that decays by alpha emission or spontaneous fission, or any mixture for which either the identity or the concentration of any radionuclide in the mixture is not known. . . .	-	4E-4	2E-13	1E-15	2E-9	2E-8

FOOTNOTES:

¹"Submersion" means that values given are for submersion in a hemispherical semi-infinite cloud of airborne material.

²These radionuclides have radiological half-lives of less than 2 hours. The total effective dose equivalent received during operations with these radionuclides might include a significant contribution from external exposure. The DAC values for all radionuclides, other than those designated Class "Submersion," are based upon the committed effective dose equivalent due to the intake of the radionuclide into the body and do NOT include potentially significant contributions to dose equivalent from external exposures. The licensee may substitute 1E-7uCi/ml for the listed DAC to account for the submersion dose prospectively, but should use individual monitoring devices or other radiation measuring instruments that measure external exposure to demonstrate compliance with the limits. (See RHA 3.7)

³For soluble mixtures of U-238, U-234, and U-235 in air, chemical toxicity may be the limiting factor (see RHA 3.5.5). If the percent by weight (enrichment) of U-235 is not greater than 5, the concentration value for a 40-hour workweek is 0.2 milligrams uranium per cubic meter of air average. For any enrichment, the product of the average concentration and time of exposure during a 40-hour workweek shall not exceed 8E-3 (SA) uCi-hr/ml, where SA is the specific activity of the uranium inhaled. The specific activity for natural uranium is 6.77E-7 curies per gram U. The specific activity for other mixtures of U-238, U-235, and U-234, if not known, shall be:

$$\begin{aligned} \text{SA} &= 3.6\text{E}-7 \text{ curies/gram U} & \text{U-depleted} \\ \text{SA} &= [0.4 + 0.38 (\text{enrichment}) + 0.0034 (\text{enrichment})^2] \text{ E-6}, \text{ enrichment} \geq 0.72 \\ &\text{where enrichment is the percentage by weight of U-235, expressed as percent.} \end{aligned}$$

NOTE: 1. If the identity of each radionuclide in a mixture is known but the concentration of one or more of the radionuclides in the mixture is not known, the DAC for the mixture shall be the most restrictive DAC of any radionuclide in the mixture.

NOTE: 2. If the identity of each radionuclide in the mixture is not known, but it is known that certain radionuclides specified in this appendix are not present in the mixture, the inhalation ALI, DAC, and effluent and sewage concentrations for the mixture are the lowest values specified in this appendix for any radionuclide that is not known to be absent from the mixture; or

Table 1 Occupational Values			Table 2 Effluent <u>Concentrations</u>		Table 3 Releases to <u>Sewers</u>	
Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Col. 1	Col. 2
Oral	Ingestion	<u>Inhalation</u>	Air	Water	Monthly	Average
ALI (uCi)	ALI (uCi)	DAC (uCi/ml)	(uCi/ml)	(uCi/ml)	Conc. (uCi/ml)	(uCi/ml)

Radionuclide

If it is known that Ac-227-D and Cm-250-W are not present

-	7E-4	3E-13	-	-	-
---	------	-------	---	---	---

If, in addition, it is known that Ac-227-W,Y, Th-229-W,Y, Th-230-W, Th-232-W,Y, Pa-231-W,Y, Np-237-W, Pu-239-W, Pu-240-W, Pu-242-W, Am-241-W, Am-242m-W, Am-243-W, Cm-245-W, Cm-246-W, Cm-247-W, Cm-248-W, Bk-247-W, Cf-249-W, and Cf-251-W are not present

-	7E-3	3E-12	-	-	-
---	------	-------	---	---	---

If, in addition, it is known that

Sm-146-W, Sm-147-W, Gd-148-D,W, Gd-152-D,W, Th-228-W,Y, Th-230-Y, U-232-Y, U-233-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, Np-236-W, Pu-236-W,Y, Pu-238-W,Y, Pu-239-Y, Pu-240-Y, Pu-242-Y, Pu-244-W,Y, Cm-243-W, Cm-244-W, Cf-248-W, Cf-249-Y, Cf-250-W,Y, Cf-251-Y, Cf-252-W,Y, and Cf-254-W,Y are not present

-	7E-2	3E-11	-	-	-
---	------	-------	---	---	---

If, in addition, it is known that

Pb-210-D, Bi-210m-W, Po-210-D,W, Ra-223-W, Ra-225-W, Ra-226-W, Ac-225-D,W,Y, Th-227-W,Y, U-230-D,W,Y, U-232-D,W, Pu-241-W, Cm-240-W, Cm-242-W, Cf-248-Y, Es-254-W, Fm-257-W, and Md-258-W are not present

-	7E-1	3E-10	-	-	-
---	------	-------	---	---	---

Radionuclide

If, in addition, it is known that Si-32-Y, Ti-44-Y, Fe-60-D, Sr-90-Y, Zr-93-D, Cd-113m-D, Cd-113-D,

In-115-D,W, La-138-D, Lu-176-W,
 Hf-178m-D,W, Hf-182-D,W, Bi-210m-D,
 Ra-224-W, Ra-228-W, Ac-226-D,W,Y,
 Pa-230-W,Y, U-233-D,W, U-234-D,W,
 U-235-D,W, U-236-D,W, U-238-D,W,
 Pu-241-Y, Bk-249-W, Cf-253-W,Y,
 and Es-253-W are not present - 7E+0 3E-9 - -

If it is known that Ac-227-D,W,Y,
 Th-229-W,Y, Th-232-W,Y, Pa-231-W,Y,
 Cm-248-W, and Cm-250-W
 are not present - - - 1E-14 - -

If, in addition, it is known that
 Sm-146-W, Gd-148-D,W, Gd-152-D,
 Th-228-W,Y, Th-230-W,Y, U-232-Y,
 U-233-Y, U-234-Y, U-235-Y, U-236-Y,
 U-238-Y, U-Nat-Y, Np-236-W, Np-237-W,
 Pu-236-W,Y, Pu-238-W,Y, Pu-239-W,Y,
 Pu-240-W,Y, Pu-242-W,Y, Pu-244-W,Y,
 Am-241-W, Am-242m-W, Am-243-W, Cm-243-W,
 Cm-244-W, Cm-245-W, Cm-246-W, Cm-247-W,
 Bk-247-W, Cf-249-W,Y, Cf-250-W,Y,
 Cf-251-W,Y, Cf-252-W,Y, and
 Cf-254-W,Y are not present - - - 1E-13 - -

If, in addition, it is known that
 Sm-147-W, Gd-152-W, Pb-210-D,
 Bi-210m-W, Po-210-D,W, Ra-223-W,
 Ra-225-W, Ra-226-W, Ac-225-D,W,Y,
 Th-227-W,Y, U-230-D,W,Y, U-232-D,W,
 U-Nat-W, Pu-241-W, Cm-240-W, Cm-242-W,
 Cf-248-W,Y, Es-254-W, Fm-257-W, and
 Md-258-W are not present - - - 1E-12 - -

Radionuclide

If, in addition it is known that
 Fe-60, Sr-90, Cd-113m, Cd-113, In-115,
 I-129, Cs-134, Sm-145, Sm-147, Gd-148,
 Gd-152, Hg-194 (organic), Bi-210m,
 Ra-223, Ra-224, Ra-225, Ac-225, Th-228,
 Th-230, U-233, U-234, U-235, U-236,
 U-238, U-Nat, Cm-242, Cf-248, Es-254,
 Fm-257, and Md-258 are not present - - - - - 1E-6 1E-5

NOTE 3. If a mixture of radionuclides consists of uranium and its daughters in ore dust (10um AMAD particle distribution assumed) prior to chemical separation of the uranium from the ore, the following values may be used for the DAC of the mixture: 6E-11 uCi of gross alpha activity from uranium-238, uranium-234, thorium-230, and radium-226 per milliliter of air; 3E-11 uCi of natural uranium per milliliter of air; or 45 micrograms of natural uranium per cubic meter of air.

NOTE 4. If the identity and concentration of each radionuclide in a mixture are known, the limiting values should be derived as follows: determine, for each radionuclide in the mixture, the ratio between the concentration present in the mixture and the concentration otherwise established in Appendix B for the specific radionuclide when not in a mixture. The sum of such ratios for all of the radionuclides in the mixture may not exceed "1" (i.e., "unity").

Example: If radionuclides "A," "B," and "C" are present in concentrations C_A , C_B , and C_C , and if the applicable DACs are DAC_A , DAC_B , and DAC_C , respectively, then the concentrations shall be limited so that the following relationship exists:

$$\frac{C_A}{DAC_A} + \frac{C_B}{DAC_B} + \frac{C_C}{DAC_C} \leq 1$$